



NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

**COLLABORATION IN THE SAN FRANCISCO BAY
AREA METROPOLITAN MEDICAL RESPONSE
SYSTEM**

by

Bruce K. Martin

September 2010

Thesis Co-Advisors:

Susan Hocevar

Gail Thomas

Approved for public release; distribution is unlimited

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			<i>Form Approved OMB No. 0704-0188</i>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE September 2010	3. REPORT TYPE AND DATES COVERED Master's Thesis	
4. TITLE AND SUBTITLE Collaboration in the San Francisco Bay Area Metropolitan Medical Response System			5. FUNDING NUMBERS	
6. AUTHOR(S) Bruce K. Martin				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. government. IRB Protocol number <u>NPS20090096-IR-EP7-A</u> .				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited			12b. DISTRIBUTION CODE A	
13. ABSTRACT (maximum 200 words) <p>Within the San Francisco Bay Area there are four cities that host a Metropolitan Medical Response System (MMRS) program: San Francisco, San Jose, Oakland and Fremont. The four Bay Area MMRS cities are within fifty miles of each other. The MMRS resources could be used to reinforce each other's planning and response. The 103-city, 10-county Bay Area is under one Urban Area Security Initiative (UASI). Currently though, the MMRS programs in the four cities work independently of each other and of the UASI. How can these agencies collaborate to address mission gaps and overlaps?</p> <p>This thesis uses a Delphi survey methodology to ascertain institutional perspectives on benefits, processes, enablers and barriers to collaboration in the San Francisco Bay Area. With collaborative effort, gaps and overlaps in San Francisco Bay Area mass casualty preparedness and response can be mitigated. This thesis recommends short term and long term actions to encourage collaboration in the Bay Area, which, in turn, can lead to better patient outcomes in infrequent mass casualty incidents.</p>				
14. SUBJECT TERMS collaboration, Metropolitan Medical Response System (MMRS), Urban Area Security Initiative (UASI), San Francisco Bay Area, benefits of collaboration, barriers, enablers, interorganizational collaboration, Fremont Fire Department			15. NUMBER OF PAGES 161	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UU	

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release; distribution is unlimited

**COLLABORATION IN THE SAN FRANCISCO BAY AREA METROPOLITAN
MEDICAL RESPONSE SYSTEM**

Bruce K. Martin
Fire Chief, Fremont Fire Department, California
B.S., College of Notre Dame, 1992

Submitted in partial fulfillment of the
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES
(HOMELAND SECURITY AND DEFENSE)**

from the

**NAVAL POSTGRADUATE SCHOOL
September 2010**

Author: Bruce K. Martin

Approved by: Susan Hocevar
Thesis Co-Advisor

Gail Thomas
Thesis Co-Advisor

Harold A. Trinkunas, PhD
Chairman, Department of National Security Affairs

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

Within the San Francisco Bay Area there are four cities that host a Metropolitan Medical Response System (MMRS) program: San Francisco, San Jose, Oakland and Fremont. The four Bay Area MMRS cities are within fifty miles of each other. The MMRS resources could be used to reinforce each other's planning and response. The 103-city, 10-county Bay Area is under one Urban Area Security Initiative (UASI). Currently though, the MMRS programs in the four cities work independently of each other and of the UASI. How can these agencies collaborate to address mission gaps and overlaps?

This thesis uses a Delphi survey methodology to ascertain institutional perspectives on benefits, processes, enablers and barriers to collaboration in the San Francisco Bay Area. With collaborative effort, gaps and overlaps in San Francisco Bay Area mass casualty preparedness and response can be mitigated. This thesis recommends short term and long term actions to encourage collaboration in the Bay Area, which, in turn, can lead to better patient outcomes in infrequent mass casualty incidents.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

I.	INTRODUCTION	1
A.	PROBLEM STATEMENT	1
B.	PURPOSE OF THIS STUDY	3
C.	RESEARCH QUESTIONS AND METHODOLOGY	3
D.	SIGNIFICANCE OF RESEARCH.....	4
E.	ORGANIZATION OF THE THESIS	5
II.	HISTORY AND BACKGROUND	7
A.	INTRODUCTION	7
B.	METROPOLITAN MEDICAL RESPONSE SYSTEM (MMRS).....	7
C.	URBAN AREA SECURITY INITIATIVE (UASI).....	9
D.	SAN FRANCISCO BAY AREA EMERGENCY PREPAREDNESS PLANS	10
E.	PROGRAM ASSESSMENTS	12
1.	National Assessments	13
2.	San Francisco Bay Area Assessments	16
F.	SUMMARY	20
III.	LITERATURE REVIEW	23
A.	INTRODUCTION	23
B.	DEFINITIONS OF COLLABORATION	23
C.	WHY SHOULD PUBLIC AGENCIES COLLABORATE?	24
D.	HOW DO PUBLIC AGENCIES COLLABORATE?	28
1.	Theories of Collaboration	28
2.	Building Collaborative Capacity	34
a.	<i>Purpose and Strategy.....</i>	<i>39</i>
b.	<i>Structure.....</i>	<i>41</i>
c.	<i>Lateral Processes</i>	<i>42</i>
d.	<i>Reward Systems</i>	<i>42</i>
e.	<i>People</i>	<i>42</i>
f.	<i>Barriers</i>	<i>43</i>
g.	<i>Leadership.....</i>	<i>43</i>
E.	SUMMARY	45
IV.	RESULTS OF MMRS NATIONAL CONFERENCE SURVEY	47
A.	INTRODUCTION	47
B.	METHOD	47
C.	RESULTS	48
1.	Question 1.....	49
2.	Questions 2 and 3.....	49
a.	<i>Inputs.....</i>	<i>51</i>
b.	<i>Process.....</i>	<i>52</i>
c.	<i>Outputs</i>	<i>54</i>

3.	Question 4.....	54
a.	<i>Purpose and Strategy</i>	55
b.	<i>Structural Elements</i>	56
c.	<i>Lateral Mechanisms</i>	56
d.	<i>Incentives</i>	56
e.	<i>People</i>	57
4.	Question 5.....	57
a.	<i>Purpose and Strategy</i>	57
b.	<i>Structure</i>	58
c.	<i>Lateral Mechanisms</i>	58
d.	<i>Incentives</i>	58
e.	<i>People</i>	59
5.	Question 6.....	59
a.	<i>Inputs</i>	60
b.	<i>Process</i>	61
c.	<i>Outputs</i>	62
D.	CONCLUSION	62
V.	METHOD AND RESULTS—DELPHI SURVEY	65
A.	INTRODUCTION	65
B.	DELPHI SURVEY METHOD	66
C.	DELPHI SURVEY ROUND ONE RESULTS.....	69
1.	How Important Would Each of These Achievements Be in Motivating Your Organization to Engage in Collaboration With Other SF Bay Area MMRSs and/or the SF Bay Area UASI?.....	70
2.	To What Extent Do You Believe That Your Agency Could Actually Achieve Each of the Following Results From Collaboration With Other SF Bay Area MMRSs and/or the SF Bay Area UASI?.....	73
3.	What Other Benefits Are to Be Gained From a SF Bay Area MMRS/UASI Collaboration?	76
a.	<i>Inputs</i>	76
b.	<i>Process</i>	76
c.	<i>Outputs</i>	77
4.	What Might Be the Downsides or Costs of SF Bay Area MMRS/UASI Collaboration?	77
5.	What Would Be the Major Challenges of Starting a SF Bay Area MMRS/UASI Collaboration?.....	77
6.	What Would Enhance the Success of a SF Bay Area MMRS/UASI Collaboration?	78
D.	DELPHI SURVEY ROUND TWO RESULTS.....	78
1.	In the First Round of the Survey, You Were Asked to Rate Activities That Would Motivate You to Engage in Collaboration With Other SF Bay Area MMRSS and/or the Bay Area UASI.....	79

2.	What Do the Above Results Imply About MMRS and/or UASI Collaboration?	80
a.	Inputs.....	80
b.	Process.....	80
c.	Outputs.....	81
d.	Other Responses.....	81
3.	It Would Be Difficult to Attempt All of These Outcomes. Which Three Would Be Your Top Priority?	81
4.	The Following Themes of Downsides or Costs to Bay Area MMRS-UASI Collaboration Were Noted in the First Round.....	83
5.	I Feel There Are No Downsides or Costs to Bay Area MMRS-Collaboration	85
6.	The Following Challenges to Bay Area MMRS-UASI Collaboration Were Generated From the First Round	85
7.	Are the Above Challenges Insurmountable? Why or Why Not?..	87
8.	How Can These Challenges Be Overcome?	87
9.	The Following Factors That Can ENABLE Successful Bay Area MMRS-UASI Collaboration Were Generated From the First Round	88
10.	Given the Data on Benefits, Challenges, and Success Factors, What Would You Identify As the Appropriate Agenda for Collaboration Between The MMRSS and UASI? In Other Words, What Is the Way Ahead?.....	90
11.	Are There Models in Our Region of Successful Collaboration? Please Name Them.....	91
E.	CONCLUSION	91
VI.	FINDINGS AND RECOMMENDATIONS	93
A.	INTRODUCTION	93
B.	RESEARCH QUESTION FINDINGS	95
1.	What Would Be the Benefits of Effective Collaboration Among MMRSs and UASI in This Region?	95
2.	How Would Collaboration Increase or Decrease Operational (Emergency Response) Capacity?.....	96
3.	How Would Collaboration Address Gaps and Overlaps in Planning?.....	97
4.	What Would Successful Collaboration Look Like?	97
5.	How Can the Gap Between the Current State and the Ideal State Be Narrowed or Filled?	98
6.	How Can Alignment Between MMRS and UASI Be Created?.....	99
7.	What Are the Enabling Factors for Improving Collaboration in the San Francisco Bay Area?	100
8.	What Are the Barriers to Collaboration in the San Francisco Bay Area?	101

9.	How Can Metropolitan Medical Response System (MMRS) Agencies in a Region Collaborate to Address Mission Gaps and Overlaps?.....	103
a.	<i>Activities</i>	103
b.	<i>Processes</i>	104
C.	ITEMS FOR ACTION/IMPLEMENTATION AND CHALLENGES ..	107
1.	Short-Term Actions	107
2.	Long-Term Actions.....	108
D.	SUGGESTIONS FOR FUTURE RESEARCH	109
E.	CONCLUSION	110
APPENDIX A.	NATIONAL MMRS SURVEY.....	111
APPENDIX B.	DRAFT CONTACT E-MAIL FOR SUBJECTS.....	113
APPENDIX C.	INTRODUCTION EMAIL ROUND 1	115
APPENDIX D.	INTRODUCTION EMAIL ROUND 2	125
	LIST OF REFERENCES.....	135
	INITIAL DISTRIBUTION LIST	141

LIST OF FIGURES

Figure 1.	Bardach's Craftsmanship Theory Platforms (From Bardach, 1998, p. 274)...	30
Figure 2.	Huxham and Vangen's Theory of Collaborative Advantage (From Huxham and Vangen, 2001, p. 38).....	32
Figure 3.	Interorganizational Collaborative Capacity Model (From Hocevar et al., 2006).....	38
Figure 4.	Organizational Design Components (After Jansen et al., 2008)	39
Figure 5.	IOM Process Model (From IOM, 2002).....	50
Figure 6.	IOM Process Model (From IOM, 2002).....	59
Figure 7.	IOM process model (From IOM, 2002)	76

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

Table 1.	Factors that Characterize Effective Regional Coordination of Federally Supported Efforts (From GAO, 2009, p. 11).....	14
Table 2.	Themes Noted in Collaborative Theories (After Gray 1985; Bardach, 1998; Huxham and Vangen, 2005).....	33
Table 3.	Factors Affecting Collaboration (From Hocevar et al., 2006, p. 8)	36
Table 4.	Conference Attendee Rating of Collaboration between Their MMRS and Others.....	49
Table 5.	Themes of Motivators and Benefits Regarding Collaboration.....	51
Table 6.	ICC Domain Categories (After Hocevar et al., 2006)	55
Table 7.	Themes Describing What Successful Collaboration Would Look Like.....	60
Table 8.	Themes of Motivators and Benefits and Themes of Idealized Collaboration Appearance	63
Table 9.	Example Delphi Survey Round One Questions	67
Table 10.	Example Delphi Survey Round Two Questions.....	68
Table 11.	Ratings of Achievements to Motivate Collaboration	70
Table 12.	Themes from Round One—Potential Specific Benefit of Collaboration	71
Table 13.	Ratings of Likelihood of Achieving Specific Benefits Due to Collaboration	73
Table 14.	Activities Which Could Motivate Collaboration.....	79
Table 15.	Priorities of Outcomes to Attempt.....	82
Table 16.	Activities That Could Deter Participation In A Collaborative Effort.....	84
Table 17.	Challenges That Could Deter Collaboration	86
Table 18.	How Challenges Can be Overcome.....	88
Table 19.	Presence of Factors that Enable Collaboration.....	89
Table 20.	Agenda Ideas for Bay Area MMRS and UASI Collaboration	90
Table 21.	Critical Bay Area MMRS-UASI Collaborative Processes (After Hocevar et al., 2006)	106

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF ACRONYMS AND ABBREVIATIONS

AAR	After Action Report
ABAG	Association of Bay Area Governments
BAREC	Bay Area Regional Emergency Coordination Plan
CBRNE	Chemical, Biological, Radiological, Nuclear, Explosive
CDC	Centers for Disease Control
CFA	Capability Focus Area
CHDS	Center for Homeland Defense and Security
CMRS	Countywide Medical Response System
CWFSE	Chemical Weapons Full Scale Exercise
DHHS	Department of Health and Human Services
DHS	Department of Homeland Security
DMAT	Disaster Medical Assistance Teams
EMS	Emergency Medical Service
FEMA	Federal Emergency Management Agency
FIREScope	Firefighting Resources of California Organized for Potential Emergencies
FOUO	For Official Use Only
GAO	Government Accounting Office
HRSA	Interorganizational Collaborative Capacity
IOM	Institute of Medicine
LHMP	Local Hazard Mitigation Plan
MMA	Master Mutual Aid
MMRS	Metropolitan Medical Response System
MMST	Metropolitan Medical Strike Team
MMTF	Metropolitan Medical Task Force
MRC	Medical Reserve Corps
NDMS	National Disaster Medical System
OA	Operational Area
ODP	Office of Domestic Preparedness
OEP	Office of Emergency Preparedness

OES	Office of Emergency Services
PDD	Presidential Decision Directive
SEMS	Standardized Emergency Management System
SF	San Francisco
SME	Subject Matter Expert
SOPs	Standard Operating Procedures
SWAT	Special Weapons and Tactics
TC	Target Capabilities
UASI	Urban Area Security Initiative
USAR	Urban Search and Rescue
WMD	Weapons of Mass Destruction

ACKNOWLEDGMENTS

First and foremost my thanks go to Tammy. Without her support and encouragement, I would still be in the application process.

My boss, Fred Diaz, gave me the opportunity and supported this. Gerry Kohlmann and Charlie Dickinson supported my application and have been wonderful colleagues willing to beat up as many ideas as I wanted to present.

The men and women of the Fremont Fire Department continued to perform to the highest levels of public service and kept their citizens safe. They also endured an 18-month barrage of new ideas and perspectives with true professionalism and figured out how to adopt or apply a number of them.

The staff, faculty, and my co-advisors at the Center for Homeland Defense and Security have been a wonderful group from which to learn. Their perspectives, experience, and humanity make this school and program a true asset to the nation and its citizens. They ask hard questions and expect thoughtful answers. That expectation was challenging and rewarding.

Thanks to the subject matter experts of the MMRS and UASI programs who provided their insights and expertise into this study, and who work every day on preparedness and response. My colleagues in Cohorts 0805/0806 tolerated my occasional rants, provided thoughts and encouragement, and are generally very nice people. With the minds, talents, and passion these people have, there is no doubt that the country is enriched by having them in the services they lead.

My thoughts are with my father, a Navy veteran who always emphasized education and did quiet, hard work. For a guy with a GED, he seemed to know a lot of stuff.

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

A. PROBLEM STATEMENT

Within the San Francisco Bay Area, four cities host a Metropolitan Medical Response System (MMRS) program: San Francisco, San Jose, Oakland and Fremont. The four Bay Area MMRS cities are within 50 miles of each other, located in three of the San Francisco Bay Area's 10 counties. The first and fundamental mission of MMRS is to plan for and respond to the multiple casualty consequences of a weapon of mass destruction (WMD) event. The MMRS concept unifies the efforts of first responders, public health, medical and mental health services, emergency management, volunteers and businesses to create preparedness and response capabilities. The national MMRS program takes advantage of existing local capabilities and provides resources to plan and enhance local capabilities. MMRS has evolved from WMD events to address other multi-casualty or public health concerns, such as a pandemic.

Currently, the MMRS programs in the four cities work independently of each other. Each has individual plans for its MMRS system and other related emergency preparedness and response functions. MMRS guidance does not prescribe one strategy to achieve its goals; since inception it has allowed agencies to design their system to meet their local needs. So, an MMRS agency can engage in planning, or it can build a Metropolitan Medical Task Force (MMTF). The consequences of this local choice in the San Francisco Bay Area are four different ways to achieve ostensibly the same mission. This leads to both planning and operational gaps and overlaps. Plans that address WMDs from the ten counties covered by the four Bay Area MMRS programs could conflict, overlap each other, or attempt to use the same resources simultaneously. There may be examples of redundant equipment purchases and training schedules among all the agencies in the 10 counties.

Should an emergency occur today and multiple MMRS agencies responded, they would strive to succeed. If a longer-term, public health need occurred and the agencies called upon each other, agencies would try to work with each other. Such positive

behavior has been observed before in California in emergent (Tunnel Fire) and non-emergent incident response (Newcastle disease). However, an emergency scene is a challenging place in which to build collaboration (Moynihan, 2005). It does not seem that good intentions alone will increase effectiveness of first response at infrequent WMD emergencies.

When measured against MMRS target capabilities, each Bay Area MMRS program appears to be successfully meeting its program objectives; none has been defunded. However, a critique of MMRS within the homeland security community is that it is city based and that not all threats fit neatly into city jurisdictional lines (V. Valdes, personal communication, December 15, 2008). As a local example, Stanford University is located in unincorporated Santa Clara County, not in any of the four MMRS cities. University of California (UC), Berkeley, is located in the city of Berkeley, which is also not an MMRS city. Both institutions are home to stadiums and facilities listed as critical infrastructure on the Local Hazard Mitigation Plan. Should a WMD event happen at either stadium, no MMRS response is planned or predetermined.

The lack of awareness of MMRS capabilities may lead to the resources of a MMRS being left idle while an incident is occurring in a smaller, neighboring, non-MMRS city. Seven Bay Area counties do not contain an MMRS city and do not seem to be aware of the resource. They can easily obtain fire, law and medical resources from neighboring counties via existing plans but not MMRS.

Overlying the entire Bay Area region is the Bay Area Urban Area Security Initiative (UASI). The purpose of the UASI program is to support regional collaboration among local jurisdictions and emergency response organizations to build and sustain the regional preparedness capabilities necessary to prevent, protect, respond to and recover from acts of terrorism. The UASI grant program is designed to distribute federal funding to an urban region composed of multiple local governments and first responder agencies rather than a single city. The MMRS and UASI programs cover the same jurisdictions and overlap each others' mission.

B. PURPOSE OF THIS STUDY

The purpose of this study is to determine local perspectives on collaboration between Bay Area MMRS and UASI programs. The MMRS cities collaborate on a number of regional endeavors; this study explores challenges and benefits of a regional collaboration about preparedness and response for the multi-casualty consequences of a man-made or natural disaster. Local subject matter experts were surveyed for their perspectives on benefits and challenges of collaboration, as well as enablers and barriers to collaboration. The data gathered in this study can inform Bay Area MMRS collaborative efforts. By probing and analyzing the participants' concept of successful collaboration, the research describes an idealized process and outcome of a regional homeland security approach to the Bay Area MMRS and UASI missions.

C. RESEARCH QUESTIONS AND METHODOLOGY

The goal of this research is to reveal institutional perspectives towards collaboration of the four MMRS agencies and the regional UASI. The research question and the secondary questions below are intended to illuminate the thinking of local managers on the benefits of collaboration to the MMRS agencies and their citizens:

The primary research question is:

- How can Metropolitan Medical Response System (MMRS) agencies in a region collaborate to address mission gaps and overlaps?

The secondary research questions are:

- What would be the benefits of effective collaboration among MMRSs and UASI in this region?
- How would collaboration increase or decrease operational (emergency response) capacity?
- How would collaboration address gaps and overlaps in planning?
- What would successful collaboration look like?
- How can the gap between the current state and the ideal state be narrowed or filled?

- How can alignment between MMRS and UASI be created?
- What are the enabling factors for improving collaboration in the San Francisco Bay Area?
- What are the barriers to collaboration in the San Francisco Bay Area?

This study uses a qualitative survey of a national MMRS sample to identify perceived motivators and benefits of collaboration, collaborative enablers and barriers and characteristics of successful collaboration. The results of this survey were used to create questions incorporated in a Delphi survey of San Francisco Bay Area MMRS and UASI professionals. The Delphi survey included both quantitative and qualitative questions. Quantitative questions sought ratings of achievements that could motivate collaboration, achievements that could result from collaboration, priorities of activities, and enablers and barriers. Qualitative questions included requests for specific examples of achievements, enablers, barriers and an agenda for collaboration moving forward. These data are analyzed and summarized to address the research questions above. Details on the methodology will follow in a later chapter.

D. SIGNIFICANCE OF RESEARCH

The immediate consumers of this research will be the four San Francisco Bay Area MMRS programs and the San Francisco UASI. The results of the research, when fed back to the MMRSs and UASI, can be a catalyst for organizational development. By identifying and addressing the gaps and overlaps in the MMRS/UASI efforts it will be possible to achieve better outcomes during a WMD event. If collaboration is encouraged or enhanced by this research, there will be a positive outcome to preparedness and response in the region. Additionally, the national MMRS program can benefit by offering the results of this research to other MMRS and UASI programs around the United States as the MMRS program evolves. There are 124 MMRSs and 62 UASIs in the United States. Homeland security practitioners and leaders often work in environments where collaboration is necessary to achieve mission goals. This research can provide insights into the challenges of collaboration, as well as an approach to successful collaboration between different governments and disciplines.

E. ORGANIZATION OF THE THESIS

Chapter I of this thesis introduces the research topic. Chapter II presents background on the MMRS and UASI programs, other San Francisco Bay Area preparedness programs and several program assessments. Chapter III presents a literature review on the definitions, motivators, theories and themes of collaboration. The chapter introduces an interagency collaborative capacity model as a conceptual framework for factors that enable or impede collaboration. Chapter IV presents the methodology and results of a qualitative survey collected at the 2009 National MMRS conference, which in turn informed the Delphi survey development. Chapter V details the methodology and results of a two-round Delphi survey collected from a sample of San Francisco Bay Area MMRS and UASI professionals. Chapter VI presents the thesis findings, short- and long-term recommendations and questions for future research.

THIS PAGE INTENTIONALLY LEFT BLANK

II. HISTORY AND BACKGROUND

A. INTRODUCTION

This chapter provides a history and background of the Metropolitan Medical Response System (MMRS) and Urban Area Security Initiative (UASI) programs. The descriptions of both MMRS and UASI planning and response systems show how collaboration is or is not indicated in the respective programs. Following the background of these programs is a review of pertinent assessments of the programs that frame the themes related to the research question, “What would be the benefits of effective collaboration?”

B. METROPOLITAN MEDICAL RESPONSE SYSTEM (MMRS)

The Metropolitan Medical Response System was created in 1996. The immediate stimulus for the program was the sarin gas attack in Tokyo, Japan, in 1995, and the Oklahoma City bombing one month later. On the heels of those two events, President Bill Clinton signed Presidential Decision Directive 39 (PDD 39), *U.S. Policy on Counterterrorism*. PDD 39 set U.S. policy on terrorism over a broad range of topics and laid groundwork for bolstering national emergency management capability. Two years later, the MMRS program was begun (Institute of Medicine, 2002; Metropolitan Medical Response System [MMRS], 2005).

The federal responsibility for MMRS initially resided with Health and Human Services (HHS) Office of Emergency Preparedness (OEP) and the need for inter-organizational collaboration was evident from its inception. In a 1995 seminar held by HHS and the U.S. Public Health Service, participants noted that “unprecedented cooperation and planning and execution” (MMRS, 2005, p. 6) were required for counterterrorism preparedness, as well as the assertion that “the integrated response of health, medical, fire rescue, EMS, and other local law enforcement organizations is absolutely key” (p. 7).

Concern in 1995 for terrorist attacks in the Washington, D.C. area led to the development of the first Metropolitan Medical Strike Team (MMST) pilot project. The project was headed by the Arlington County, Virginia, Fire Department and involved approximately 50 local and regional organizations (MMRS, 2005). As the Washington pilot program began, OEP assembled another strike team in preparation for the 1996 Summer Olympics in Atlanta, Georgia. From these two pilot programs, a collaborative local response structure began to emerge and was embraced as a national concept. The Nunn-Lugar-Domenici Act of 1996 identified 120 of the United States' largest cities, all of which would eventually establish an MMRS program, and provided funding for weapons of mass destruction incident planning (MMRS, 2005). To date, MMRS is the longest running federal terrorism preparedness program supporting first responders (MMRS, 2005).

These first two MMSTs were essentially hazardous materials response teams modified to mitigate the release of a military nerve agent and treat subsequent multiple casualties. As the system developed over the next few years, hospitals and emergency medical communities became an integral part of the response effort. With these modifications, the name changed from Metropolitan Medical Strike Team to Metropolitan Medical Response System; the name change emphasized the programmatic capabilities of existing systems involving a variety of stakeholders. It became clear that the spectrum of deliverables required under the program would be impossible for any one local government agency to accomplish. The core content of the deliverables include activities such as detecting and identifying toxic agents, extracting victims from contaminated areas, emergency treatment of victims, triage and patient transport to definitive care, definitive care, mass immunization, mass fatality management and identifying residual health risk (DHS, 2008). In a typical city, at least five separate agencies would be involved in providing those services and, most likely, more.

The MMRS concept unifies the efforts of first responders, public health, medical and mental health services, emergency management, volunteers and business in meeting its capabilities. MMRS takes advantage of local capabilities and provides guidance and resources to plan and enhance preparedness and response. MMRS guidance does not

prescribe one strategy to achieve its goals. Instead, it has allowed agencies to design a system to meet their local needs. MMRS reiterates these imperatives on its Web site:

Gaining these capabilities also increases the preparedness of the jurisdictions for a mass casualty event caused by an incident involving hazardous materials, an epidemic disease outbreak, or a natural disaster. MMRS fosters an integrated, coordinated approach to medical response planning and operations, as well as medical incident management at the local level (MMRS, 2005).

C. URBAN AREA SECURITY INITIATIVE (UASI)

The purpose of the UASI program is to support regional collaboration among local jurisdictions and emergency response organizations to build and sustain the regional preparedness capabilities necessary to prevent, protect, respond to and recover from acts of terrorism. The UASI grant program is designed to distribute federal funding to an urban region composed of multiple local governments and first responder agencies rather than a single city.

The November 2008 Mumbai attacks, where members of a terrorist group attacked multiple locations, including transportation, commercial and religious facilities, illustrated the propensity of terrorists to strike high-profile urban targets (Government Accountability Office [GAO], 2009, p. 1). The 2010 *Quadrennial Homeland Security Review Report* acknowledges, “Terrorist organizations have expressed the intent to employ mass-casualty WMD as well as smaller scale attacks against prominent political, economic, and infrastructure targets in the United States and around the world” (DHS, 2010, p. 6). To prepare for and respond to such acts of terrorism, the Department of Homeland Security (DHS) provides grants administered by the Federal Emergency Management Agency (FEMA) to state, local and tribal jurisdictions and urban areas to build and sustain national preparedness capabilities. From its inception in fiscal year 2003 through fiscal year 2009, Congress has appropriated about five billion dollars for the Urban Area Security Initiative to support regional preparedness in the nation’s highest risk urban areas (GAO, 2009).

The San Francisco Bay Area UASI received \$40,638,250 for regional preparedness in fiscal year 2009 (Emergency Management, 2010). The Bay Area UASI Web site describes the purpose of the local program:

The Urban Area Security Initiative (UASI) Program provides financial assistance to address the unique multi-disciplinary planning, operations, equipment, training and exercise needs of high-threat, high-density urban areas, and to assist them in building and sustaining capabilities to prevent, protect against, respond to, and recover from threats or acts of terrorism. UASI funding remains primarily focused on enhancing capabilities to address CBRNE, agriculture and cyber-terrorism incidents; however, in support of national ongoing preparedness initiatives addressing such issues as pandemic influenza and the aftermath of Hurricane Katrina, the allowable scope of UASI Program activities was expanded, provided that these activities also build capabilities that relate to terrorism. (Bay Area SUASI, 2009)

The Bay Area UASI also asserts that it, “Enhances regional capability through regional collaboration...directs funding to projects and work products that have regional impact as well as wide application among individual Bay Area communities” (Bay Area SUASI, 2009). The Bay Area UASI has a link to MMRS in the region; its goals include:

To enhance existing regional programs including: the Regional Emergency Coordination Plan project, the Cities Readiness Initiative, *Metropolitan Medical Response Systems* [emphasis added], the Regional Maritime Security Working Group, the Regional Transit Security Working Group, the Regional Terrorism Threat Assessment Center, and the various Citizen Corps projects. (Bay Area SUASI, 2009)

D. SAN FRANCISCO BAY AREA EMERGENCY PREPAREDNESS PLANS

A variety of agencies and groups in and around the San Francisco Bay Area perform or participate in planning and preparedness. Some of these groups’ work influence MMRS and/or UASI plans. In California, plans have been typically developed county by county, under the auspices of the state’s mutual aid system.

The state of California adopted a Master Mutual Aid (MMA) Plan in 1950. This plan frames all emergency management within California and, therefore, the Bay Area.

The state plan defines basic aspects of emergency preparedness and response and evolved in the 1990s with the adoption of the Standardized Emergency Management System (SEMS), which includes:

...well-accepted mechanisms for horizontal collaboration among state and local units of government. California's Standardized Emergency Management System (SEMS) was developed in response to criticisms of the handling of the 1991 fire in the Oakland Hills. In response to the California Emergency Services Act an emergency plan was developed that establishes a number of mutual aid systems and a nationally recognized emergency management system, the "Standardized Emergency Management System" (SEMS). The National Incident Management System (NIMS), now the country's mandated emergency management system, was developed using the essential concepts of SEMS. (Callahan, 2008)

The basic framework of California's system consists of three parts: fire and rescue, law and emergency management. Emergency management consists of everything besides fire and law. The state is divided into six mutual aid regions, and each region is divided into a number of operational areas (OA), which are single counties or a group of counties. Each county mirrors the three arms of the MMA: fire and rescue, law and emergency management. The political subdivisions within each county organize emergency planning, preparedness and response in a variety of locally determined ways.

Planning for WMD, multi-casualty and public health events is complex. The state and national systems for emergency preparedness, planning and response have stimulated the development of a variety of emergency plans. Each county will typically have its own basic emergency plan, required under SEMS, as well as a fire and law mutual aid plan. The OA Emergency Plan will often have annexes for threats such as flood, earthquake, terrorism and civil unrest. OA plans may also include fatality management, volunteer management and debris management. It is common to find a county hazardous materials response plan, multi-casualty incident plan and bioterrorism response plan. Many of these plans address issues also within the scope of MMRS and UASI programs

The county of Santa Clara Public Health Department, for example, has devoted time and energy into developing a Countywide Medical Response System (CMRS) plan

(Santa Clara Valley, 2002). The plan acknowledges and builds on existing efforts, including San Jose MMRS, and reveals that the agencies in the county must be mindful of 17 other existing plans and guidelines related to public health and multi-casualty emergency preparedness (Santa Clara Valley, 2002). The number of plans is likely to be similar for the other MMRSs and in each county in the Bay Area. So, in the Bay Area region, there could be 10 versions of each of the 17 plans and guidelines. Added to those county plans is a Bay Area Regional Emergency Coordination Plan (BAREC), a regional component to multi-casualty events in the State Emergency Plan and a draft Statewide Disaster Medical Operations Manual. Finally, there is the National Disaster Medical System, which references MMRS as a component of its system.

Other preparedness entities in the San Francisco Bay area include the Association Bay Area Governments (ABAG), which consists of all local governments within the 10 Bay Area counties. ABAG plans a variety of issues, including the FEMA-required Local Hazard Mitigation Plan (LHMP). The LHMP mentions emergency response preparedness, particularly hazardous materials and earthquakes (ABAG, 2010). The MMRS programs within California created an MMRS coalition to attempt to compare and contrast best practices and to advocate for the program at the state level. The coalition proposed standardizing MMRS resource designation and composition under the state's mutual aid plan, without success; however, the concept resurfaces in a Bay Area UASI document mentioned later in this chapter. The lack of success is sometimes attributed to a lack of executive leadership championing its adoption (V. Valdes, personal communication, December 15, 2008).

E. PROGRAM ASSESSMENTS

To date, there are few external assessments of either MMRS or UASI programs at the national or local levels. Both programs must report to DHS the completion of their respective deliverables (DHS, 2008). Staffs develop the reports for DHS internally. This section presents external reports found by the literature review, beginning with two evaluations of MMRS and one of UASI from a national perspective, followed by two regional preparedness assessments and one individual city exercise evaluation.

1. National Assessments

In one evaluation of the MMRS, the Institute of Medicine (IOM) was asked by DHHS OEP to assist in evaluating the effectiveness of MMRS programs. Its investigation resulted in *Preparing for Terrorism: Tools for Evaluating the Metropolitan Medical Response System* in 2002. The report identified and developed performance measurements and systems and provides a set of tools for use by DHHS and programs to evaluate themselves (Institute of Medicine [IOM], 2002, p. 1). The report makes a number of general observations about the programs but does not evaluate MMRS program's actual performance nationally or individually by city. The general observations made include:

- strengthening existing systems was preferable to building new systems,
- an all-hazards approach at the local level can work for MMRS and other needs,
- there is a wide range of capabilities across the U.S., and
- a bottom-up approach to preparedness aids can result in positive outcomes in that “strengthening existing systems not only improves the emergency response to terrorist incidents but also improves the emergency responses to other disasters.” (IOM, 2002, p. 7)

A view of MMRS from a national health care system perspective is advanced by Cooksey (2004), whose findings essentially describe an unclear link between MMRS and other homeland security components, particularly the National Disaster Medical System components. In 2004, she observed, “comprehensive and coordinated planning to organize the nation’s response systems to deal with future terrorism attacks is still in an active developmental phase” (Cooksey, 2004, p. 4). Cooksey adds, “there are opportunities for greater linkages to be developed between the national disaster medical system and MMRS components at the local metropolitan and regional levels, which would establish a stronger ‘response system.’” She further observes:

...there has been limited contact between the disaster medical response systems and personnel within local healthcare systems and practicing health professionals (other than EMS personnel). Efforts have begun to change this, including programs such as the Medical Reserve Corps, the

new special and EMS teams for nurses and pharmacists, hospital and public health preparedness programs, bioterrorism education preparedness for physicians and others, and other activities. (Cooksey, 2004, p. 5)

With regard to UASIs, the Governmental Accountability Office (GAO) released a report in June 2009 on FEMA’s measurement of UASI efforts towards collaboration. FEMA has stated, “...the UASI program directly supports the national priority to expand regional collaboration” (GAO, 2009, p. 9). The GAO found that FEMA “does not have measures to assess how UASI regions’ collaborative efforts have built preparedness capabilities” (GAO, 2009, p. i). Therefore, an assessment of UASI collaborative performance is not yet possible at a national level. Even so, the GAO also provided the following table (Table 1), which delineates pertinent practices that enhance regional undertakings.

Table 1. Factors that Characterize Effective Regional Coordination of Federally Supported Efforts (From GAO, 2009, p. 11)

Factors that Characterize Effective Regional Coordination of Federally Supported Efforts	
Factors	Definition
Collaborative regional organization	A collaborative regional organization includes representation from many different jurisdictions and different disciplines such as fire, police, and emergency medical organizations.
Flexibility in membership and geographic area	When regional civic and political traditions foster interjurisdictional coordination, allowing localities to choose their membership and geographic area of the regional organization can enhance collaborative activities.
Strategic planning	A strategic plan with measurable goals and objectives helps focus resources and efforts to address problems.
Regional funding	Funding at a regional level provides incentives for regional organizations’ collaborative planning activities.

In August 2007, the Center for Homeland Defense and Security (CHDS) at the Naval Postgraduate School in Monterey, California, published a working group's recommendations on MMRS. The purpose of the paper was to provide an overview of the working group's assessment followed by a series of recommendations. The findings and recommendations centered on lack of consistency of capabilities developed within MMRS programs, lack of national focus, redundant mission and goals with other grant programs and positive networking activity that has improved relationships and capabilities in preparedness and response (Center for Homeland Defense and Security [CHDS], 2007).

The CHDS report takes a national perspective on MMRS. Its goal was to provide professional programmatic recommendations that could be integrated into the MMRS grant guidance development process in the coming years (CHDS, 2007, p. 1). The working group was comprised of a number of MMRS staffers. The group was asked to conduct an assessment of the state of the MMRS and then generate a series of recommendations to improve the program using working group members and comments from focus groups of other MMRS leadership.

The paper identified a number of issues such as the MMRS program's failure to require jurisdictions to develop lifesaving capabilities fully, such as mass medical response, before developing supporting capabilities, such as communications. The paper asserts that a dynamic has resulted in inconsistent use of MMRS grant funds among the MMRS jurisdictions in the country:

MMRS grant funds can currently be used for various and disparate activities: to organize, recruit, establish and train Medical Reserve Corps volunteers, train personnel to support pandemic influenza preparedness, stockpile influenza vaccine and antiviral medications for emergency responders, strength and interoperable communications or to strengthen information sharing and collaboration. (CHDS, 2007, p. 3)

The working group concluded: "In short, the MMRS program is increasingly unfocused" (CHDS, 2007, p. 2).

The paper identified hurdles to developing consistency in the program. Among those hurdles was an observation of redundant mission and goals among DHS and DHHS grants (CHDS, 2007, p. 4). Specifically:

The Centers for Disease Control and Prevention's (CDC) Bioterrorism Preparedness Grants, and the Department of Health and Human Services (DHHS) Health Resources and Services Administration (HRSA) Hospital Preparedness Program Grant, and the MMRS grant share common or redundant target capabilities (TC), capability focus areas (CFAs) or deliverables. While inter-grant commonality and consistency allows funds from multiple grants to be spent in common areas, this redundancy has the unintended consequence of prioritizing those common projects or deliverables, even if that project or deliverable would not be a priority based upon creating life-saving capacity. Redundant TCs, CFA's or deliverables have in some cases caused duplication of effort and resource expenditure. (CHDS, 2007, p. 4)

The focus groups' comments revealed that "...polled jurisdictions uniformly agree that MMRS has been a valuable tool for establishing and encouraging organizational relationships among healthcare, medical, and first responder communities" (CHDS, 2007, p. 6). These jurisdictions reported that MMRS program activities led to the integration or coordination of their communities' planning efforts and in developing and strengthening their networks; however, it is not clear if this network activity would have developed without MMRS (CHDS, 2007). The working group and the focus groups agree that both relationships and response capabilities are better across the nation as a result of MMRS.

2. San Francisco Bay Area Assessments

An assessment of San Francisco Bay Area MMRS programs is found in the San Francisco Bay Area UASI's *Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) Capability Assessment and Strategic Plan* (2008). The use of the term *CBRNE* has superseded the term *weapons of mass destruction* (WMD) found in earlier literature. The CBRNE plan was intended to provide a blueprint to help Bay Area UASI make resource allocation decisions. One of the plan's goals was to increase regional integration

of CBRNE response capacity with other ongoing capability improvements. An objective under that goal was to enhance regional MMRS capabilities (Bay Area Urban Area Security Initiative [UASI], 2008, p. ES-6).

The CBRNE plan assessed the San Francisco Bay Area MMRS programs in order to identify potential MMRS capabilities for CBRNE response and to develop recommendations for improving regional collaboration and use of those capabilities. The plan's project team conducted meetings with local program coordinators, as well as with national working group members and other MMRS program coordinators in Anaheim, California; Glendale, Arizona and Tucson, Arizona. The project team also reviewed each city's MMRS development plan, concept of operations plan and sustainment plan (Bay Area UASI, 2008, p. 12-4). The project team solicited recommendations from program coordinators and national working group members. The plan noted, "common recommendations were distilled from the meetings and *reflect a movement to utilize planning, partnerships, and training mechanisms to enhance city and regional readiness and response collaboration* [emphasis added]" (Bay Area UASI, 2008, p. 12-5).

While MMRS preparedness and response gaps were not explicitly identified in the CBRNE plan, the plan did offer actions to address preparedness and response gaps. The actions offered included:

1. Encourage formal regional and state level meetings to use the draft FIREScope¹ framework to type Metropolitan Medical Task Forces (MMTFs).²
2. MMRS cities should formally decide if their assets will respond outside of their city or region and then develop agreements reflecting those decisions.
3. Develop a Bay Area MMRS operations plan.
4. Support MMTF efforts by actively promoting regular planning, recruitment, training and response participation by all members.

¹ Firefighting Resources of California Organized for Potential Emergencies is the state board responsible for categorizing response assets.

² MMTF is a California-specific resource designator and is synonymous with MMST.

5. Increase regional MMTF capability to be self-sufficient during the 72-hour deployment outside of its operational area.
6. Build the MMRS program identity and public support for education of elected officials and the media.
7. Incorporate volunteer organizations such as the Community Emergency Response Team and the Medical Reserve Corps's in MMRS program activities. (Bay Area UASI, 2008, p. 12–5)

Specific to the Bay Area region but less specific to MMRS is the *Bay Area Super Urban Area Security Initiative Training and Exercise—Regional Overview—Gap Analysis* (Bay Area UASI, 2008b). Pertinent to MMRS, the gap analysis found needs in the area of hazardous materials technical training and incident management training. The analysis recommended prioritizing training funds according to the results of its gap analysis.

This study was scoped to determine federal and state mandates for disaster response training exercises for law enforcement, fire and emergency medical services and to assess how successful the region has been in achieving those mandates and what hindrances have been found in attempting to comply with those mandates. Findings of note included the development of incident management teams as high priority (Bay Area UASI, 2008b, p. v). This gap is important as the management of the responders in a MMRS event would be challenged by both incident and organizational complexities.

Finally, specific to Fremont, California, the Office of Domestic Preparedness (ODP) produced a Chemical Weapons Full-Scale Exercise (CWFSE) After Action Report (AAR). This AAR found areas for improvement in joint decision making, inter-agency coordination, preparedness and planning of first responders and hospitals (Office of Domestic Preparedness [ODP], 2002).

In the early 2000s, the city of Fremont was chosen to receive training and equipment through the Department of Justice (DOJ) Domestic Preparedness Program (DPP). As a part of this program, the local response community participated in three successful exercises: a Chemical Weapons Tabletop Exercise in June 2000, a Biological Weapons Tabletop Exercise in August 2001 and a Chemical Weapons Full-Scale

Exercise in July 2002. By July 2002, Fremont had been designated as an MMRS program city and the components of its nascent program were exercised as MMRS development work was beginning.

Significant observations of the CWFSE AAR included that while the span of control of each agency appeared to be adequate, the organization of joint decision-making that was critical to the exercise incident did not occur. The report's recognition and recommendation was that "to respond effectively to the demands of a potential long-term WMD event, significant coordination and problem solving must occur among the respective commanders of each responding agency" (ODP, 2002, p. 5). Driessen has observed that group cohesion can take weeks to develop in emergency response groups that operate together in a full-time capacity (Putnam, 1995, p. 4). The type of cohesion desired by groups who only operate together in low frequency events could then take months or even years to develop, but this cohesion is particularly critical in a volatile, uncertain, complex and ambiguous operational environment such as mass casualty consequences of man-made or natural disasters.

During the exercise, the fire department and the emergency medical services responders apparently used two different multi-casualty incident plans at the time of the exercise (ODP, 2002). Those plans did not address the use of MMRS, Urban Search and Rescue (USAR), Disaster Medical Assistance Teams (DMAT) and Disaster Mortuary Response Team (DMORT) resources from the region. This demonstrated the inadequacy of joint decision-making and a lack of cohesion.

The Chemical Weapons Full-Scale Exercise report observed that should a large or extended response operation have developed, areas of additional work included roles and responsibilities of physicians, the county medical director's role, the health department's role, and the role of mental health workers, all of which are now part of the Fremont MMRS program (ODP, 2002). Another component of MMRS is the region's hospitals. This exercise revealed gaps in three hospitals' response plans (ODP, 2002, p. E-3). The MMRS program, by including hospitals in its network, provides an opportunity for hospitals to review and improve their internal plans with regard to the mass casualty consequences of a man-made or natural disaster and the coordination with other agencies.

Other AAR recommendations dealt with tactical or technical needs. Fremont MMRS used many of the report's recommendations to create the initial scope of work when it established its MMRS program. Many of the report's recommendations have been addressed; however, the group cohesion is still not well established.³

F. SUMMARY

This chapter introduced a background of the MMRS and UASI programs, followed by related preparedness systems and plans. It attempted to frame the development of the systems nationally, regionally and locally. Six assessments of the MMRS and UASI programs were reviewed for the gaps that they illustrated in planning and response. Filling these gaps may provide a benefit in a collaborative effort.

As noted, the CWFSE observations are specific to Fremont MMRS; however, in the UASI there are 10 counties, three other MMRS programs, and 103 cities (ABAG, 2010). Each of the counties has a multi-casualty incident plan. Each may have a bioterrorism plan. Each does have an emergency plan. County lines have a tremendous impact on preparedness and response, and act as a virtual wall for planners, responders and sometimes hospitals. Preparing to operate in an efficient fashion when moving casualties from an incident to definitive care in a hospital will require working across county lines and thus require cross-jurisdiction planning.

The evaluations and assessments presented in this section display, as Cooksey notes, a "mixed state of affairs" (2004, p. 6). Nationally, the MMRS program has been described as unfocused and not attending to priorities or the collaboration inherent in its design. A similar observation has also been made regionally and locally regarding MMRS and UASI. The potential benefits of complex, multi-agency planning and response aspects of MMRS individually and across the region is noted. UASI does approach problems regionally but has not been evaluated for its collaborative capacity.

³ Based on author's observation of Fremont MMRS activities.

No stimulus seems to exist which would address gaps and overlaps regionally in a multi-MMRS and UASI area. There is, however, acknowledgement in the respective MMRS and UASI strategies that collaboration is important.

Locally, technical competence and improvement within an individual program, the Fremont MMRS, has been observed but an attempt at collaboration with the region's UASI and MMRS has not yet been observed.

THIS PAGE INTENTIONALLY LEFT BLANK

III. LITERATURE REVIEW

Our message to practitioners and policymakers alike is don't do it [collaboration] unless you have to. (Huxham & Vangen, 2005, p. 13)

A. INTRODUCTION

A variety of academic, military, and business literature exists on collaboration and the aspects of teamwork and disaster response. According to Weber, “as early as 1967, scholars and practitioners from different disciplines recognized that the dynamic complexity of many public problems defies the confines of established ‘stove piped’ systems of problem definition, administration, and resolution” (2008, p. 336). In response to complex public problems, collaboration has become integrated into the problem process.

This literature review focuses on information related to the research question: “How do we collaborate?” The chapter begins with the definitions of collaboration found in the literature, a presentation of motivators to collaboration framed with the question “Why should public agencies collaborate?” followed by a review of collaboration theories and themes. The review of collaboration theories and themes is framed by the question “How do public agencies collaborate?” The collaborative capacity model (Hoevevar, Thomas, & Jansen, 2006) is presented as a conceptual framework to identify factors that enable or impede collaborative capacity.

B. DEFINITIONS OF COLLABORATION

There are a variety of definitions for the word “collaboration.” Virtually every author writing on the topic begins by creating or adapting a definition. In 1989, Gray defined collaboration as “a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible” (1989, p. 5). Donna Wood and Barbara Gray also define collaboration, “Collaboration occurs when a group of autonomous stakeholders of a problem domain engage in an interactive process, using

shared rules, norms, and structures, to act or decide on issues related to that domain” (1991, p. 146). In addition, collaboration is defined by Bardach as “... any joint activity by two or more agencies that is intended to increase public value by their working together rather than separately” (1998, p. 8). Huxham and Vangen observe that collaboration is “any situation in which people are working across organizational boundaries towards some positive end (2005, p. 4),” and label the achievement of collaboration more specifically as “collaborative advantage.” The definition of collaborative advantage is that “... industry networks ... can be helpful in developing the industry...partnerships between public organizations, and those with and between nonprofit organizations, to tackle social issues that would otherwise fall between the gaps” (2005, p. 3). Specific to homeland security, Hocevar, Thomas, and Jansen (2006) define collaborative capacity as “collaborative capacity is the ability of organizations to enter into, develop, and sustain inter-organizational systems in pursuit of collective outcomes” (p. 3).

One can infer several things from these definitions. First, collaboration is a group activity that includes groups of people or agencies. In addition, there is no constraint on the makeup of the group or agency, public, private, non-profit or other, and there is some benefit or reason for agencies to collaborate. Finally, it is a dynamic and multifaceted process.

C. WHY SHOULD PUBLIC AGENCIES COLLABORATE?

In addition to a number of definitions for collaboration, the literature reveals a number of reasons agencies would collaborate. The acquisition of some type of benefit, tangible or intangible, seems to be chief among them. Agencies also collaborate because they are unable to meet their goals singly or because they suffer a sudden significant demand that overwhelms their normal capacity. Finally, agencies may confront a wicked problem that requires several agencies to solve. Agencies may choose not to collaborate for reasons as well, chiefly concern for their own resources, mission or turf. This section will review reasons to engage or not engage in collaboration in more detail.

Agencies, or the public managers within agencies, collaborate for different reasons. For example, is the need strategic? Is the need problem-based? Is it based on the style of management of the agencies or is there a wicked problem to be solved? Bardach notes, “I count 15 to 20 reasons why agencies and people who work for them would be reluctant to contribute resources to interagency collaborative and another 11 to 15 reasons why they might overcome their reluctance or, indeed, contribute with enthusiasm” (1998, p. 197). The 9/11 Commission’s observation on the differences between responses in New York City and in Washington, D.C. mentions the need for collaboration among agencies attempting to counter terrorism (National Commission, 2004). Subsequent National MMRS Program Guidance requires collaboration of its recipients/participants (DHS, 2008).

The literature suggests that collaboration takes place when an agency believes it can realize some benefit that makes collaboration worth the cost. Organizations may seek benefits from collaborative partners (O’Leary & Bingham, 2009), and those benefits can be tangible or intangible. Partners may bring resources or program expertise. In addition, partners may enhance organizational legitimacy. Partners also may emerge from legacy relationships that result in a lower transaction costs to begin a collaborative effort (O’Leary & Bingham, 2009).

Another reason that agencies collaborate is to share resources. That is, agency A has an ambulance that agency B can use and agency B has a radio system that agency A can use. The sharing of resources can lead to quite complex relationships between agencies. Resources have attributes: functionality, importance, tangibility or availability; however, the sharing partners may perceive each attribute differently (O’Leary & Bingham, 2009). Resource sharing is therefore more complicated than a simple exchange of resources.

Resources are not the only motivator to collaborate. Agencies may collaborate because they are simply “unable to accomplish their goals unilaterally, either because they do not exercise complete authority over the policy area or because they lack important resources” (O’Leary & Bingham, 2009, p. 33). Even so, most organizations prefer autonomy to dependence (O’Leary & Bingham, 2009). Additionally, Moore

(1996) suggests that collaboration is a search for operational capacity, which is used to create something of “public value.” In Moore’s strategic model, operational capacity exists within an organization or must be obtained to do the work necessary to accomplish the mission. Moore observes:

Managerial success in the public sector amounts to initiating and reshaping public sector enterprises in ways that increase their value to the public in both the short and the long run ... sometimes this means increasing efficiency, effectiveness, or fairness and currently defined missions. Other times it means introducing programs that respond to new political aspiration or meet a new need in the organization’s task environment so that its old capabilities can be used more responsibly and effectively. (Moore, 1996, p. 10)

Moore (1996) also notes that one cannot assume that managers interested in creating public value collaborate for that reason alone. Careerist and bureaucratic motivations are often sources of collaborative effort. In other words, employees may promote or engage in collaboration solely for their professional benefit, particularly if their agency rewards such behavior. Moore claims that such engagement may be independent of value from the collaborative effort. He states, “There is an inescapable element of subjectivity in deciding what constitutes public value ...” (Moore, 1996, p. 9).

Sometimes an event that creates a significant demand on an agency may compel collaboration. Disaster response, by definition, means an agency must continue to meet routine needs while its resources and capabilities are overwhelmed; thus, the agency requires support from other agencies. The emergency management profession has begun to style itself as a group of facilitators as opposed to directors or controllers (O’Leary & Bingham, 2009). A government response to natural disasters is required suddenly and lasts a long time, and the response is critically reviewed post-incident. Disaster response crosses disciplines agencies and jurisdictional boundaries (Moynihan, 2005). Gray (1985) observed, “During crises, the likelihood of collaboration increases.” (p. 912).

Like disasters, wicked problems may be a motivator to collaborate (Moynihan, 2005; Weber, 2008). Wicked problems are unstructured, which means causes and effects are extremely difficult to identify and model, thus adding complexity and uncertainty and

engendering a high degree of conflict. There is little consensus on the problem or the solution. The wicked problem space comprises multiple, overlapping, interconnected subsets of problems that cut across multiple policy domains and levels of government. Finally, wicked problems are relentless. The problems are not resolved once and for all despite all the best intentions and resources directed at the problem, and efforts to solve a wicked problem will have consequences for other policy arenas as well (Weber, 2008). In *Megacommunities* (Gerencser, Van Lee, Napolitano, & Kelly, 2008) the authors label these problems “unsolvable” by any one sector of society: government, private or civil. To solve wicked problems, they propose collaboration, a “megacommunity” (Gerencser et al., 2008).

In spite of the many reasons to collaborate, sometimes entities chose not to. Bardach (1998) points out two reasons that entities choose not to collaborate: localism and mission. He explains:

For instance, the American tradition of localism entails that geographically adjacent communities will operate to some degree from specialized, usually exclusive, and jealously protected tax bases. They worry a great deal about protecting their own communities’ agency budgets from social costs imposed by their neighbors. They also worry about protecting their local service beneficiaries from the possibility of different priorities and service mix or in targeting that might occur if neighboring jurisdictions started to take a hand in policy decisions. (Bardach, 1998, p. 11)

Bardach (1998) also observes that attachment to mission, whether by legislation, mandate, or history can be a disincentive for agencies to give up autonomy. Hovevar et al. (2006) also discuss reasons why organizations fail at collaboration. They reference a GAO report:

Organizations fail at collaboration for many reasons: organizations have their own missions with goals and incentives that often conflict with one another; agencies often have histories of distrust that are hard to alter; leaders may not actively support collaborative efforts; and coordination systems and structures that might support collaboration are often lacking. (U.S. Government Accountability Office, December 2002)

D. HOW DO PUBLIC AGENCIES COLLABORATE?

This section presents three theories of collaboration: process (Gray, 1985), craftsman (Bardach, 2001) and collaborative advantage (Huxham & Vangen, 2005). The collaborative capacity model (Hocevar et al., 2006) is presented as a conceptual framework to identify factors that enable or impede collaborative capacity, and to integrate the theories and themes of collaboration.

1. Theories of Collaboration

How is operating within a collaboration different from operating within a single agency? Egan and Huxham (2001) observe, “Despite the pressures in favor of collaboration, there is a great deal of evidence that collaborative ventures often fail to live up to expectations” (p. 373). Collaborative efforts involve a variety of interactions. Those interactions can be influenced by both organizational characteristics and individual characteristics. This section will review three theories of collaboration and compare their major components.

Gray (1985) offers a process approach and asserts that it is important to focus on the interdependencies of collaborating organizations. Gray’s process model of collaboration consists of three phases: problem setting, direction setting and structuring. During problem setting, stakeholders within a domain are identified and mutually acknowledge the issue that joins them. Their negotiations are around the legitimacy of both the stakeholders and the problem, and it is during this phase that the participants begin to understand their interdependence. In the direction-setting phrase, stakeholders articulate values. A common sense of purpose, well as interpretations about the future, begin to develop. In the structuring phase, particularly if the problem is persistent, ongoing processes are developed to manage interactions between the partners.

Gray (1985) also looks at the collaboration between or within domains as opposed to between or within organizations. Domains differ from organizations in several ways. For example, domains are sets of actors concerned about a common problem or interest, and each of the problems could involve many organizations and individuals. In addition,

domains cut across traditional organizational boundaries, such as the separate law, fire and emergency medical response organizations, or governmental and non-governmental organizations. Sometimes these domains may be under organized, that is, they may look more like networks of organizations rather than an existing organization (Gray, 1985). Similarly, MMRS program collaboration has two aspects: the collaboration within each MMRS, and the regional, or domain, collaboration between the MMRSs and other entities. In either case, Gray's process theory applies, as do the following theories of collaboration.

In his craftsmanship theory, Bardach states that there may be hundreds of individuals who are potentially relevant to building inter-organizational collaborative capacity (ICC). He also advocates, "...Craftsmanship theory puts at the center the possibility, and indeed the probability, of creative, purposive, human action" (Bardach, 2001, p. 151).

This ICC is almost an organization to itself. Bardach (1998) describes developing an ICC by using the metaphor of building a house. A house under construction begins with a foundation, which then allows the builders to create a frame, and then a roof, followed by plumbing, electrical and other components of the final house. Bardach posits that certain capacities are developed by ICC members, which allow for the progression through to other capacities, all of which culminate in a working collaboration. Bardach calls this "platforming," as shown in Figure 1, which is ideally encouraged by momentum that builds as the ICC realizes successes. He does, however, translate the ICC's aspects into more familiar language:

In some important ways inter organizational collaborative capacity is very much like an organization in its own right. What are organizations, after all, if not capacities for the joint productive work of many separate individuals? With only a bit of oversimplification, one might say that indirect agency collaborative capacities differ from more conventional organizational capacities mainly by virtue of their component parts having to pick their boundaries and more powerful sources of environmental influence than average. Indeed, I find it analytically convenient to speak of interagency collaborative capacity as though it were an agency itself, with conventional agency systems inside—an operating system, and overhead control system, a decision-making system. (Bardach, 1998, p. 21)

The building of interagency collaborative capacity rests on a foundation that includes the seven factors illustrated in the lower section of Figure 1:

- Trust
- Acceptance of leadership
- Communication network
- Creative opportunity
- Intellectual capital
- Implementation network
- Advocacy group

Built on top of this foundation are additional collaborative capacities that enhance operations:

- Improved steering capacity
- Operating subsystem
- Continuous learning

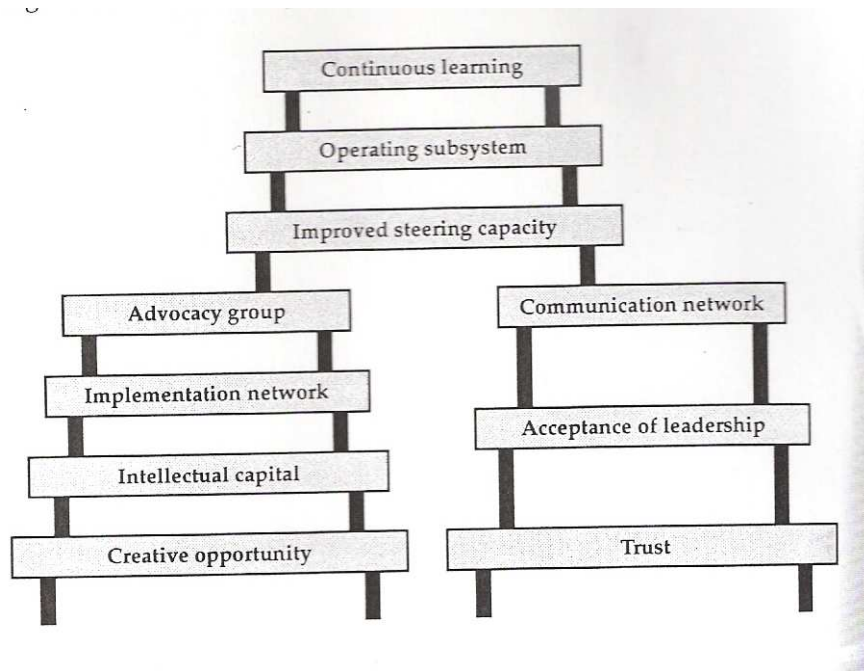


Figure 1. Bardach's Craftsmanship Theory Platforms (From Bardach, 1998, p. 274)

Huxham and Vangen, (2005) in *Managing to Collaborate*, construct their theory of collaborative advantage around themes that they have developed, as shown in Figure 2. The themes that Vangen and Huxham have identified derive from several areas: some are generated by the practitioners of collaborations, some by researchers, some by policies used or crafted in the collaborative process. Moreover, some of the themes cross-cut some or all of these sources. The themes themselves may be somewhat nebulous, blending into or influencing other themes in terms of the dynamics under which they occur. Huxham and Vangen label their theory “descriptive;” that is, it is comprised of the circumstances or dynamics that practitioners who are involved in collaborations will encounter. The themes will be discussed later in this chapter.

Many of Huxham and Vangen’s (2005) themes float in a cloud in the upper portion of Figure 2, and are noted as practitioner-generated themes. They include:

- Common aims
- Communication and language
- Culture
- Power
- Accountability
- Democracy and equality
- Risk
- Trust
- Commitment and determination
- Working processes
- Resources

Huxham and Vangen (2005) leave open areas in the cloud to acknowledge that other themes can arise in the collaborative effort. Underneath the cloud are three thematic areas and their sub-themes, as listed below (Figure 2):

- Researcher-generated themes
 - Identity
 - Social capital
- Policy-generated themes
 - Leadership
 - Learning
 - Success
- Cross-cutting themes
 - Membership structures

Each of those thematic areas also includes an open area for themes to be determined.

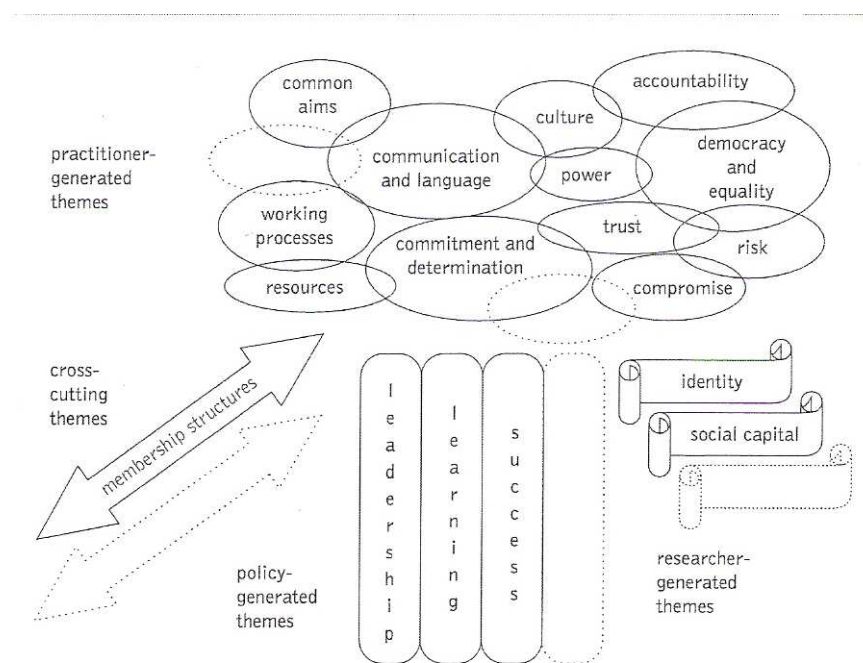


Figure 2. Huxham and Vangen's Theory of Collaborative Advantage (From Huxham and Vangen, 2001, p. 38)

There are both similarities and dissimilarities among these three theories of collaboration. When contemplating how we collaborate, there are a number of wide ranging conditions that affect the dynamic of collaboration. Huxham and Vangen

observe, “...even those who speak enthusiastically about their experiences of working collaboratively report having to deal with serious issues in order to achieve their aims” (2005).

Themes that the theories have in common include the reason impelling collaboration, designated as “problem-setting” by Gray (1985), “course” by Bardach (1998) or “purpose” and “aims” by Huxham, and Vangen (2005). Gray describes structuring, which includes interdependence, power and geography. Bardach places structure and process under the theme of steering a course, while Huxham and Vangen add dynamics to membership structure as a joint theme. Both Gray and Huxham and Vangen identify power as a theme, but Bardach is silent on it as named. While Bardach and Huxham and Vangen discuss trust, Gray does not in specific terms. Finally, Bardach and Huxham and Vangen include a theme of momentum and inertia respectively, while Gray does not. A list of themes found in Gray, Bardach and Huxham and Vangen is shown in Table 2.

In the broadest sense, all three theories of collaboration acknowledge that people and their characteristics play a role in collaboration; that the problem must be defined or identified; that the collaboration must have a purpose, goal or direction; and that there are other considerations that enter into this dynamic process.

Table 2. Themes Noted in Collaborative Theories (After Gray 1985; Bardach, 1998; Huxham and Vangen, 2005)

Gray	Bardach	Huxham & Vangen
Problem-setting Stakeholder identification Stakeholder expectations Recognizing interdependence Convener characteristics	Steering a Course Technical Problem definition Leadership Political Setting direction Structure and process	Negotiating Purpose

Gray	Bardach	Huxham & Vangen
Direction-setting Stakeholder values Power dispersion	Resources Turf Autonomy Money People Political standing Information	Managing Aims
Structuring Interdependence Power Geography	Operating System Smart practices: Flexibility HR approaches Accountability	Advantage and Inertia
	Culture of Joint Problem-Solving Pragmatism Negotiating Trust	Membership Structures and Dynamics
	Developmental Dynamics Platforming Momentum Disruption	Trust
		Power
		Identity
		Leadership

2. Building Collaborative Capacity

In addition to the three theories described above, Hocevar et al. have studied the success factors and barriers to collaboration (2006). This thesis uses the interagency collaboration capacity (ICC) model, developed by Hocevar et al., to study the collaboration among MMRS and UASI program in the San Francisco Bay Area. This section describes factors that affect ICC: purpose/strategy, structure, lateral mechanisms, incentives and people, and it integrates the framework with the work of Gray (1985), Bardach (1998), Huxham and Vangen (2005) that was discussed in the previous section of this chapter.

Hocevar et al.'s study is particularly pertinent to this study because the homeland security professionals participating were asked to "think back to a specific DHS or other effort that included at least two other agencies or organizations that you consider to have

been a successful collaboration in the preparation phase (not response phase) of DHS” (2006). The work of Hocevar et al. resulted in a survey instrument to assess collaborative capacity, as well as identify success factors and barriers to collaboration (Jansen, Hocevar, Rendon, & Thomas, 2008). Their success factors and barriers indicate likely opportunities and challenges in building a regional collaboration.

The collaborative capacity model of Hocevar et al. (2006) identified a number of factors from a sample of homeland security professionals. Those factors are displayed in Table 3.

Table 3. Factors Affecting Collaboration (From Hocevar et al., 2006, p. 8)

<i>Factors Affecting Inter-Organizational Collaboration (Study One)</i>		
Organization design component	"Success" factors	"Barrier" factors
Purpose & strategy	<ul style="list-style-type: none"> - "Felt need" to collaborate - Common goal or recognized interdependence - Adaptable to interests of other organizations 	<ul style="list-style-type: none"> - Divergent goals - Focus on local organization over cross-agency (e.g., regional) concerns - Lack of goal clarity - Not adaptable to interests of other organizations
Structure	<ul style="list-style-type: none"> - Formalized coordination committee or liaison roles - Sufficient authority of participants 	<ul style="list-style-type: none"> - Impeding rules or policies - Inadequate authority of participants - Inadequate resources - Lack of accountability - Lack of formal roles or procedures for managing collaboration
Lateral mechanisms	<ul style="list-style-type: none"> - Social capital (i.e., interpersonal networks) - Effective communication and information exchange 	<ul style="list-style-type: none"> - Lack of familiarity with other organizations - Inadequate communication and information sharing (distrust)
Incentives	<ul style="list-style-type: none"> - Technical interoperability - Collaboration as a prerequisite for funding or resources - Leadership support and commitment - Absence of competitive rivalries - Acknowledged benefits of collaboration (e.g., shared resources) 	<ul style="list-style-type: none"> - Competition for resources - Territoriality - Organization-level distrust - Lack of mutual respect - Apathy
People	<ul style="list-style-type: none"> - Appreciation of others' perspectives - Competencies for collaboration - Trust - Commitment and motivation 	<ul style="list-style-type: none"> - Lack of competency - Arrogance, hostility, animosity

Note: Items in bold were identified by at least 25 percent of the study participants.

Framed with the concepts of force field analysis and Galbraith's star model of organizational development, Jansen et al. (2008) describe their collaborative capacity model (shown in Figure 3):

Each organization can be conceptualized as a complex adaptive system with five subsystem domains. These are strategy and purpose, organizational structure, reward systems, people, and lateral processes, which are represented by the points of the pentagon in Figure 1 (cf. Galbraith, 2002). As with other open systems models, the ICC model emphasizes that the efficiency and effectiveness of each organization depends on the congruence or fit (i.e., fitness) of its subsystems. For example, efficiency is increased when an organization's incentives and reward systems are congruent with its strategic goals, structure of authority and responsibilities. (p. 5)

Jansen et al. (2008) note that a collaboration may have more than two agencies or interagency teams, each with its own collaborative capacity. Figure 3 displays within each organization two circular arrows denoting the organizational processes that continually occur. Floating within the problem space and separate from the two organizations is an interagency team, represented with the same domains as the two parent organizations and with its own internal momentum. Additionally, circular arrows between the interagency team and each parent organization denote organizational processes that must be aligned between the interagency team and the constituent organizations. All organizations involved in collaboration will have varying strengths and weaknesses in their domains.

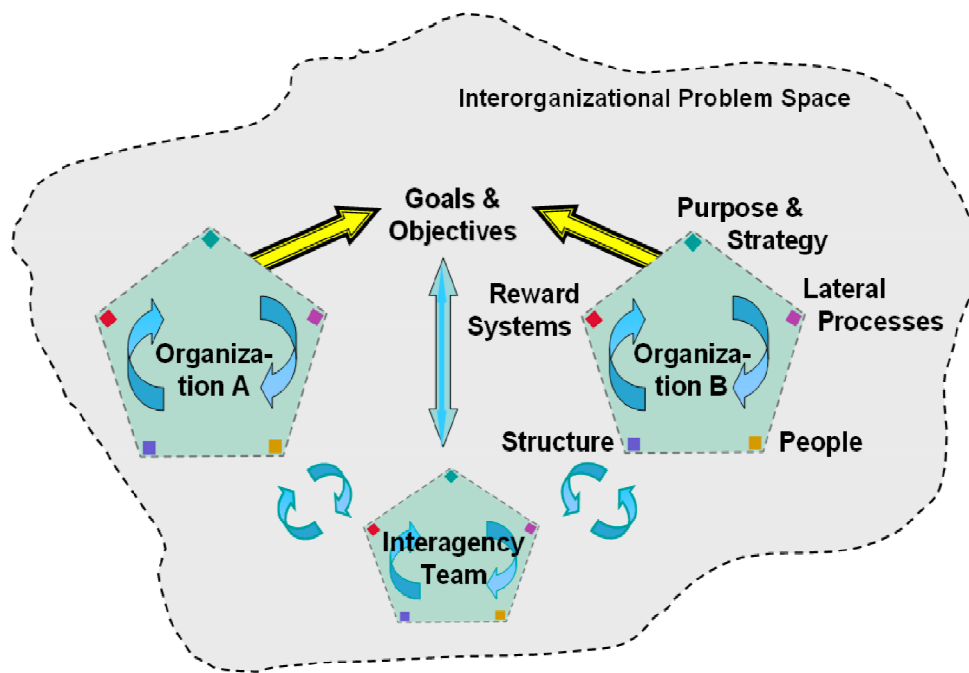


Figure 3. Interorganizational Collaborative Capacity Model (From Hocevar et al., 2006)

Figure 4 displays one of the organizations found in Figure 3; each corner of the pentagonal organization represents a domain, and each domain has one or more factors.

The domains and their factors are:

- Purpose and strategy
 - Need to collaborate
 - Strategic collaboration
 - Resource investments
- Structure
 - Structural flexibility
- Lateral processes
 - Social capital
 - Information sharing
 - Collaborative learning

- Reward systems
 - Incentives and reward systems
- People
 - Individual collaborative capacity

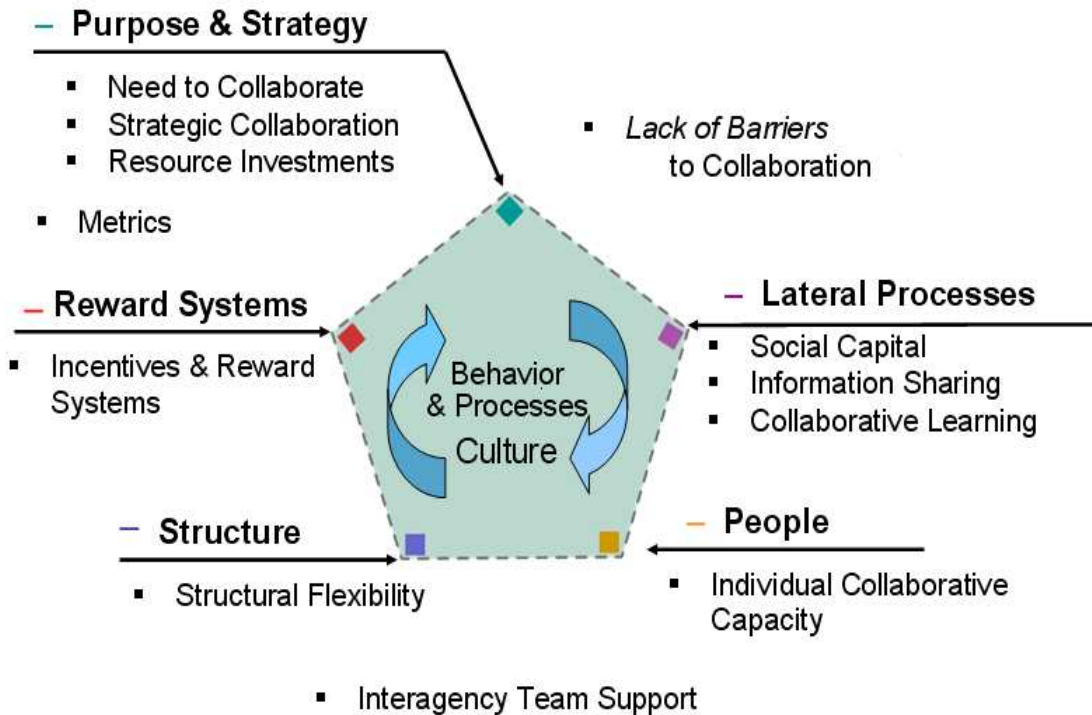


Figure 4. Organizational Design Components (After Jansen et al., 2008)

The five organizational design components that comprise the model of Hocevar et al., shown in Figure 4, were used to integrate and summarize the factors that affect collaboration that were identified in the literature reviewed above. This summary is presented below.

a. Purpose and Strategy

Hocevar et al. (2006) found that divergent goals were a barrier to collaboration. Egan and Huxham noted, “Among the many factors that are frequently argued to be essential in making collaboration work is agreement about the purpose for which they are created” (2001). Jansen et al. (2008, p. 12) noted that felt need or a sense

of urgency “is a powerful factor that motivates individuals to make commitments to learning new skills and exploring new behaviors.” They also found that “Another important theme that emerged for successful collaboration in our inductive research was having “a common goal or recognized interdependence” (Jansen et al., 2008, p. 13). Committing adequate time, money, and personnel was also important to collaboration (Jansen et al., p. 14).

According to Gray (1985), conditions that facilitate problem setting include identification of the stakeholders, determining stakeholder expectations about outcomes, recognizing interdependence and the characteristics of the initiator or convener of collaborative problem solving. As stakeholders are negotiating purpose, their knowledge and their perspective of their organizations’ goals guide the members of the group. Group members also bring their own personal values and biases to goal setting (Gray, 1985).

Gray’s (1985) conditions to facilitate direction setting include coincidence and values among stakeholders, that is, that they have a similar set of values to guide their search for a solution. Furthermore, she also notes the effect of dispersion of power among the stakeholders. Gray notes that extreme differences in power can effectively prevent problem setting as well as negatively impact direction setting. In addition, Gray believes that there is significant evidence to suggest that collaboration cannot take place unless the stakeholders possess roughly equal capability to influence the domain. She argues that some balancing of power is essential for direction setting. Similarly, Bardach (1998) claims the search for consensus dominates all ICC steering processes (p. 231).

Eden and Huxham (2005) characterize several potential interpersonal or interorganizational episodes in negotiating purpose in collaborative groups. Brief titles of observed episodes include: cohesive group, disinterested organization, outlying individual, spying organization, vetoing individual or vetoing organization, threatened organization, powerful organization and pragmatic group, skeptical group or skeptical individual, and imposed upon organization and imposed upon group.

b. Structure

Structural flexibility, according to Jansen et al. (2008), emerged less frequently than other themes. They observed, however, that Deming's approaches to continuous quality improvement and that the "importance of the larger organizational system and structure on individual behaviors is generally underestimated" (Jansen et al., 2008, p. 15). Jansen et al. concluded that one might expect structural factors to be underrepresented in the themes that people generate compared to the themes involving personal motivations, incentives, goals, and communication.

Jansen et al. (2008) noted that success factors included formalized roles and sufficient authority of participants. In contrast, Bardach (1998) also mentioned the detrimental role of delegates. In addition, Hocevar et al. (2006) found that inadequate resources are detrimental to the structure. Resources vary and Bardach defines resources as turf, autonomy, money, people, political standing and information (1998, p. 164).

Gray (1985) describes conditions that facilitate structuring. For example, she includes a degree of ongoing interdependence, demonstrated by the perception by stakeholders that they continue to depend on each other. Structuring is also facilitated by the presence of external mandates. Redistribution of power and geographic factors are conditions that affect structuring. Gray notes that trade-offs, additional incentives and the level of trust within the domain partners can affect redistribution of power.

In Bardach's (1998) view, an ICC operates in a relatively unusual task environment; therefore, the ICC confronts more novelty and variety. Bardach feels "it is unlikely that centralized and hierarchical management, especially of the sort usually seen in the public sector, will be able to do the job very well" (1998, p. 117). He believes that the self-managing teams, strike forces, and the like are examples of flexibility. Flexibility needs protection as well as control, but too much protection and control will be counterproductive.

c. *Lateral Processes*

Chief among the lateral mechanisms or processes in the literature reviewed is social capital, often labeled “trust.” While social capital refers to a network of preexisting relationships that can be leveraged in the collaborative effort, those relationships begin with trust (Bardach, 1998, p. 256), as discussed below in the *People* category. Jansen et al. (2008, p. 20) articulate social capital as “the degree to which in organizational employees or members take the initiative to build relationships and know who to contact in other organizations or agencies.” Hocevar et al. (2006) also found that communication, familiarity with other organizations in the collaboration and willingness to share information can effect collaborations. Similarly, Huxham and Vangen link the lateral mechanisms of trust and communication; they also propose a cyclical “trust building loop” to begin to build trust in the collaborative endeavor (2005, p. 155).

d. *Reward Systems*

Jansen et al. (2008, p. 16) found a strong positive result to individual collaborative effort when they assessed individual perceptions of the consequences of personal behavior in terms of their own personal payoffs. In other words, if collaborative effort can lead to rewards, promotions or career advancement, it will more likely occur. As an example of organizational reward, Hocevar et al. (2006) found that making collaboration a prerequisite for acquiring resources (e.g., grant funding) could be an enabler, as well as an acknowledged benefit of collaboration.

e. *People*

Trust also surfaces in the “people” category of Hocevar et al. (2006). Bardach defines trust as “confidence that the trustworthiness of another party is adequate to justify remaining in a condition of vulnerability” (1998, p. 252). Aspects of trust include vulnerability, confidence, justification and trustworthiness. Trustworthiness is assessed based on reputation, categorical knowledge prior personal experience and the

idea that many ICC negotiators have encountered one another previously, which also may be entitled social capital. Bardach in several areas lists smart practices for people with regard to collaborative effort (1998, p. 256).

The operating system in Bardach's model includes motivating lower-level staff and developing trust in addressing collaborative challenges (1998). Some smart practices Bardach advances in this theme include improving dialogue via disagreement, letting human nature takeover, discovering a common identity, co-locating participants and training participants.

Hocevar et al. (2006) identified a number of themes describing capacities and attitudes of individuals and their collaborative capacities. According to Jansen et al., "These include items that focus on skills, capabilities and expertise, understanding and knowledge of other organizations work in perspective, willingness to engage and share decision-making, and seeking input from the other organization" (2008, p. 21).

f. Barriers

Barriers identified by Hocevar et al. (2006) included competition for resources, territoriality, lack of respect and apathy. Turf or territoriality is mentioned also in Bardach (1998) under a discussion of resources. Organization level distrust was found to be a barrier as well. Jansen et al. (2008) offer several potential barriers, including a history of conflict between organizations, incompatibility of requirements between agencies and conflicting policies (p. 22).

g. Leadership

One aspect not directly mentioned in the ICC model of Hocevar et al. (2006) is leadership. Leadership support is acknowledged as an incentive for participants and central to strategic action for collaboration (Jansen et al., 2008). Other literature also expounds on the role of the leader. Bardach notes, "Councils, boards, forums, and implementation networks are structures for steering. Leadership is a more personal way of steering" (1998, p. 223).

Huxham and Vangen use the verb “managing” rather than leading to describe the action required:

Our key message is that managing to collaborate involved actively managing (in order) to collaborate. A corollary is that managing collaboration is an inexact art involving a lot of judgment, but that understanding the nature of collaborative situations provides important underpinning for those judgments. (Huxham & Vangen, 2005)

Bardach’s (1998) definition of leadership is somewhat similar. He states, “My definition of leadership is purely functional. It is a set of focus giving or unity enhancing behaviors that would help some collectivity, in this case an ICC, accomplish useful work” (Bardach, p. 223). He also notes that the absence of leadership may play a greater role in unsuccessful collaborations. Bardach states, “The conventional one-liner explanation of collaboration failure points to excessive consciousness on the part of agency-protecting bureaucrats. But in many cases this may not be as penetrating as an explanation that points to the underdeveloped leadership recruitment processes” (p. 228).

Huxham and Vangen (2005) also note that leadership is complex and may be delivered through structure, process and participants. *Megacommunities* authors Gerencser et al. (2008) craft a set of leader characteristics for their collaborative model, which includes a spirit of inclusiveness, non-imperial approach, a light touch, communication skills, adaptability, presence and passion and long-term thinking. They propose the notion of meta-leadership in which leaders across disciplines require a set of skills different from their colleagues in single agencies. Dorn, Henderson and Marcus agree:

These meta-leaders achieve “connectivity,” defined here as a seamless web of people, organization, resources, and information that can best catch (detect and report), respond (control and contain), and return to pre-event normal (recover) from a terrorist incident. Connectivity—among agencies, organizations, and people with complementary missions—is one by-product of meta-leadership. (2006, p. 44)

E. SUMMARY

This chapter reviewed relevant literature examined for this research project and opened with a definition of collaboration from several sources. The chapter reviewed literature that attempts to answer the research question, “How do we collaborate?” and then presented theories of collaboration and the themes found within those theories to discuss “how do public agencies collaborate?” The collaborative capacity model (Hocevar et al., 2006) was presented and discussed as a conceptual framework integrating themes from the literature that identify factors that enable or impede collaborative capacity, and therefore collaboration.

THIS PAGE INTENTIONALLY LEFT BLANK

IV. RESULTS OF MMRS NATIONAL CONFERENCE SURVEY

A. INTRODUCTION

From June 7 through June 12, 2009, the National Urban Area Security Initiative (UASI) conference was held in Charlotte, North Carolina. The conference Web site announced:

The National Urban Area Security Initiative Conference is intended to bring UASI participants, State Administrative Agencies, Department of Homeland Security officials and private sector partners together in an open environment to discuss issues of importance to those responsible for implementing and supporting UASI programs across the nation. (2009 National, 2009)

On the final day, June 12, the National Metropolitan Medical Response System conference was held at the same location; many of the UASI representatives also represented their respective MMRS programs. At the request of the National Metropolitan Medical Response System program manager, the author made a 30-minute presentation entitled “Collaboration and Communication in MMRS,” as part of the MMRS program. The presentation provided an opportunity to collect data from a national sample of industry experts. There are 124 MMRSs in the United States; the 160 attendees of the conference represented about 70 MMRSs (personal observation).

This chapter presents the survey questions, followed by a presentation of the interpretive model used and the results obtained for each question.

B. METHOD

Immediately before the presentation, the attendees received a six-question paper survey designed to solicit their thoughts about MMRS and collaboration (see Appendix A). The survey questions were:

1. How do you rate your MMRS's collaboration with other programs (e.g., another MMRS, a county, state or UASI program)?
2. Why should MMRS programs collaborate?
3. What would be the benefits of MMRS programs collaboration with each other, with UASIs, or with other programs?
4. What behaviors or abilities enhance success in collaboration?
5. What behaviors or abilities are barriers to collaboration?
6. When it is at its best, what would successful collaboration look like?

Fifty-eight anonymous surveys were collected immediately after the presentation. Data were coded and classified according to common themes and key words. The survey answers were transcribed into a word processing document and then manually sorted into similar phrases and keywords and the frequency of responses was noted. Because a variety of words were used to convey ideas, similar words were grouped into themes. Complex answers were broken into single key ideas and sorted independently.

Two models were used in the analysis; one, the Institute of Medicine's (IOM) (2002) preparedness indicators were used to provide context for the data on three of the questions related to program process and deliverables. In addition, Hocevar, Thomas and Jansen's interagency collaborative capacity (ICC) adaptation of Galbraith's star model for organizational design (2006, p. 6) was used for two of the questions that pertained more to the forces of the collaborative effort. The models complemented each other; the IOM model uses a familiar business approach and categorizes benefits of collaboration in its output component. The Hocevar et al. ICC model "offers a systematic diagnosis of organizational factors that both enhance and impede collaboration while also guiding action toward improved collaborative capacity" (Hocevar et al, 2006).

C. RESULTS

The six-question survey provided to conference attendees was designed to prompt their thinking on collaboration for the purposes of the conference presentation and

discussion, as well as to gather data. This section will present each question, explain the question's purpose, explain the thematic framework used to interpret data and show the results.

1. Question 1

Question 1: How do you rate your MMRS's collaboration with other programs (e.g., another MMRS, a county or state program or a UASI)?

This question captures a quick self-assessment by respondents of their MMRS program's efforts in collaborating. The question offered the choice of low, medium or high. The results are as follows (Table 4):

Table 4. Conference Attendee Rating of Collaboration between Their MMRS and Others

Rating of collaboration efforts	Number of responses	Percentage of responses
Low	8	14%
Medium	22	38%
High	28	48%

2. Questions 2 and 3

Question 2: Why should MMRS programs collaborate? Question 3: What would be the benefits of MMRS program's collaboration with each other, with UASIs, or with other programs?

The respondents seemed to have difficulty differentiating between the two questions, and 16 percent of them chose to answer only question two. Those respondents often noted that question three was answered in question two. The implication is that the reason to collaborate is for the benefit. Question two inquired about motivators towards collaboration among MMRS programs and prompted participants to think about what could compel them to collaborate. Question three was looking for expected advantages or

benefits for collaboration among MMRS programs, in other words, more tangible outcomes from a collaborative effort. Because the answers to both questions were similar, the responses were combined during coding and analysis.

The reasons for MMRS collaboration can be framed in the Institute of Medicine's preparedness indicators, where inputs contribute to a process that results in outputs (IOM, 2002, p. 76) (Figure 5).



Figure 5. IOM Process Model (From IOM, 2002)

This familiar business model is made specific to MMRS by the IOM. The IOM notes, “The best evidence for preparedness will almost always be outputs, which are the end products of processes undertaken with inputs” (IOM, 2002, p. 11). In addition, it also notes:

All three types of indicators are, however, merely surrogate or proxy measures of MMRS effectiveness, that are based on the judgments of knowledgeable students of the field but that have never been truly validated (and cannot be truly validated, short of an actual mass-casualty CBR terrorism incident). (IOM, 2003, p. 11)

The outputs observed at an incident could include triaged and treated patients, decontaminated patients, etc. The proxy outputs observed are plans for response, as well as trained and equipped responders. According to the IOM:

Inputs are the constituent parts called for, implicitly or explicitly, by a given deliverable (personnel; standard operating procedures; equipment and supplies; or schedules of planned meetings, training, and other future activities).

Processes are evidence of actions taken to support or implement the plan (minutes of meetings; agreements prepared; training sessions conducted; or the numbers or percentages of personnel trained to use CBR agent detection equipment).

Outputs are evidence of the effectiveness of actions taken to support or implement the MMRS plan (establishment of a stockpile of antidotes and antibiotics appropriate for the agents that pose the greatest threat and demonstration of critical knowledge; skills, and abilities in tabletop exercises, full-scale drills, or surrogate incidents such as deliberate scares and false alarms, unintentional chemical releases, naturally occurring epidemics, or isolated cases of rare diseases). (IOM, 2002, p. 10)

Table 5 displays the themes identified from the responses to questions two and three. These themes are assigned to one of the three categories of the IOM process model (IOM, 2002).

Table 5. Themes of Motivators and Benefits Regarding Collaboration

IOM Preparedness Indicator Categories	Themes
Inputs	<i>Economy of scale</i>
	<i>Avoid duplication</i>
	<i>Leverage strengths</i>
	<i>Share best practices</i>
	<i>Obtain more funding</i>
Processes	<i>Strategically plan</i>
	<i>Increase preparedness</i>
	<i>Fill gaps</i>
	<i>Common goals</i>
	<i>Enhance interoperability</i>
Outputs	<i>Increase capabilities</i>

a. Inputs

The words used by 58 percent of the respondents suggest a concern for the input side of MMRS, particularly good management practices regarding resources. These practices were expressed as taking “advantage of scale” and “efficiently using resources.” MMRS collaboration can maximize resource sharing between programs or allow the sharing of resources to achieve economy of scale. Goods and services can be purchased in bulk, funds expended more efficiently and gaps addressed. While efficiency was

couched in terms of resource sharing, it also emerged as “group strategy for seeking funding.” “Better synchronization of grant projects” and similar comments revealed some strategic thinking about the inputs to the program.

Within this input theme, nearly half mentioned avoiding duplication or “redundant effort.” Taking steps to avoid duplication was an often-stated benefit to collaboration: “Increase using funds and planning together would complement and balance resources.” Respondents believed that MMRS collaboration will create efficiencies, such as economies of scale, where multiple entities do the same tasks in the same jurisdiction. Those tasks include creating plans for program objectives and acquiring equipment for response. The same people may do this duplicate work for more than one program. Additionally, the lack of collaboration may cause “redundant capabilities” to develop in an area; therefore, MMRS program collaboration may help identify and eliminate such overlap. That, in turn, results in a more efficient allocation of resources or capabilities across a region.

Leveraging funds in particular was mentioned several times as a specific impetus for collaboration, implying that funding is what creates results in MMRS, or at least plays an important role. There was still an underlying awareness of available funds against program outputs: “Because the projects in which MMRS may be tasked to resolve are too expensive for the funding provided. Large projects need numerous grants leveraged to bring the projects to fruition.”

Forty-one percent of respondents mentioned “leveraging strengths” or “force multiplying.” While this theme often mentioned resources including personnel and equipment, it differed from simple sharing in that respondents often noted an expected synergy. That is, MMRS program’s participation in collaborative efforts would return them more than their investment.

b. Process

Fifty-five percent of respondents believed that collaboration should occur to increase the process element of preparedness (the second most prominent theme).

Obtaining “mutual aid” was the most common response, an indication that respondents believe that any incident will overwhelm local capabilities and that response from other than their program assets may be necessary. Pragmatically, one respondent remarked, “most large incidents involving mass casualties don’t follow strict jurisdictional boundaries.”

In 21 percent of responses, planning was emphasized more as a benefit of collaboration rather than an incentive to collaborate; yet similar themes emerged. Planning seemed to be framed as strategically and effectively planning across the region, jurisdictions or programs with better program performance in mind. A preventative aspect noted was that “this prevents silo building, prevents tunnel vision, integrates jurisdictions and disciplines.” One respondent stated that a benefit was “greater assurance that the elements of the program are executed in a context of larger thinking.” Also noted were capability improvements or enhancements, which lead to “an efficient team to handle complex operations during mass casualty events.”

Improvements in program effectiveness can be achieved by increasing capabilities of program elements. Some respondents answered the question in this manner, just as programs can be siloed, so can strategies and planning. To avoid this problem, some responses implied that strategy and effective planning ought to be performed across a region and across jurisdictions and programs “to effectively coordinate plans for all hazard events” or “to fulfill a coordinating role among federal grant programs.”

Strategic elements are also expressed by nearly 33 percent of respondents as “filling gaps” in program outcomes, in the methods to achieve outcomes, or “enhancing interoperability” between agencies. Enhancing interoperability can mean speaking the same language, having the same goals, the same or coordinated procedures and compatibility of tactics, equipment or techniques. One respondent noted, “operations are not the responsibility of one agency but the collaborative effort of many.”

Nearly 21 percent of the respondents saw “relationships” as a benefit that would improve preparedness. Relationships can occur between individual players in

MMRS programs or between the programs and agencies that comprise them. Relationships allow programs to “know each other’s strengths and limitations” and suggested that programs “need to work together prior to an incident.” There were several assertions that relationships would lead to other benefits, such as sharing best practices, preparedness and “long-lasting” networking. More directly, “Every response and health organization needs to be acquainted with each other because it’s a lot easier to get to know each other over a cup of coffee than it is during a pandemic or disaster.”

c. Outputs

In the output element of the model, nearly 21 percent of respondents asserted the plan should be the result of a collaborative effort: “No single jurisdiction or entity can effectively respond to MCI events alone, therefore planning should be a collaborative effort.” Most responses suggested that collaboration would “help expand response capability” and result in more effective patient care and greater depth and diversity of response. One respondent saw the benefit as “preparedness and response programs can leverage capacity for better coordination.” Respondents tended to believe that they had limited resources for their mission. For example, “too many facets of a response to do by oneself,” and that they needed to “maximize a limited resource.”

Recognizing the multiple agencies inherent in MMRS programs, one participant observed that the availability of “multiple agencies, hospital, etc. and multiple funding streams that could be leveraged to increase capabilities.” A fundamental benefit of the MMRS mission was expressed several times: “do the greatest good for all.”

3. Question 4

Question 4: What behaviors or abilities enhance success in collaboration?

This question assessed respondents’ perceptions of individual and organization characteristics that contribute to collaboration. In analyzing themes for questions four, the framework for organization design originated by Galbraith and adapted by Hocevar et al. was used (2006). The factors that enhance or impede collaboration are categorized into the five domains of an interagency collaboration as displayed in Table 6.

Table 6. ICC Domain Categories (After Hocevar et al., 2006)

ICC Category Name	Category Examples
Purpose and strategy –	Paying attention to developing or aligning, as evidenced by “felt need” to collaborate, common goal, willingness to address other agency’s interests or cross-agency goals versus local organizational goals.
Structure	Having elements that contribute to collaborative operations. Sub themes include clarifying the roles of participants and creating or using mechanisms that supported collaborative effort.
Lateral mechanisms	The existence or processes to communicate collaborative partners and their home agency authorities and resources, expressed with the sub themes of communication, and sharing.
Incentives	To participate in the collaborative effort that would enhance success predominately reflected by buy-in and support from home agency and leadership from the same.
People	Behaviors that would enhance collaborative success include several sub themes: openness, willingness, relationships, communication among participants (as opposed to communication back to home agencies), attitude and respect, trust and a lack of ego.

a. Purpose and Strategy

Paying attention to developing or aligning purpose and strategy was evidenced by statements indicating a “felt need” to collaborate, having a common goal, the willingness to address another agency’s interests or addressing cross-agency goals versus local organizational goals. Nearly 51 percent of respondents identified behaviors in this category, often advocating a regional approach. In areas that have a UASI, the UASI was suggested as the nexus for regional activities.

The sub-themes of purpose and strategy that emerged included sharing a mission, “willingness to develop and adopt a shared vision” and “inclusiveness.” Participants also emphasized the need to know the other players and to learn or understand their missions and interests. One stated that such an effort “allows for better planning and educates all stakeholders on values and responsibilities of individual agencies.” Similarly, one felt that “learning and understanding the needs of other

programs, disciplines and agencies” was important, as well as “ownership/buy in to regional effort.” Indications seem to point to a decent individual understanding of the need for common purpose to motivate collaboration. Answers also seem to indicate the belief that there is common purpose among programs.

b. Structural Elements

Having elements of a structure that contribute to collaborative operations was addressed by nearly 15 percent of surveys. Sub-themes of structure included clarifying the roles of participants and creating and using mechanisms that supported collaborative effort, such as “consistent formal meetings” and “systems for communication.”

c. Lateral Mechanisms

Twenty-one percent of responses noted that the existence of lateral mechanisms or processes enhanced success. Attention to communication between collaborative partners and their home agency’s authorities and resources was expressed with the ideas “open and frequent communication” and “consistent networking and sharing of lessons learned.” “Established relationships lead to trust,” said one respondent.

d. Incentives

The desired incentives to participate in the collaborative effort that would enhance success predominately reflected the buy-in and support from home agency and leadership from the same. Seventeen percent noted incentives, most often buy-ins: “Support from leadership to be collaborative outside of the jurisdictional boundary.” One response added that it must “provide non-threatening environment—must have executive buy in at all agencies.” Another elaborated that it was important to “maintain autonomy of program while synchronizing efforts—inclusiveness, engagement, allow conversation, differing opinions but find common ground and build.” More straightforwardly, another

observed “if your decision makers are invested, this will enhance success.” In addition, leadership was mentioned in terms of “strong” or “effective” individual leadership to the program and “access to policy leadership” as an indicator of success.

e. People

Finally, just over 48 percent mentioned people’s behaviors that would enhance collaborative success, which included several sub-themes. The most mentioned reflected openness, transparency and willingness—for example “cooperative spirit” and “willingness to compromise and listen to other disciplines’ priorities.”

Attitude and communication among participants were identified, as were trust and lack of ego. Personal characteristics were identified in a number of other single responses, which included ideas such as “generosity,” “patience,” creativity,” humility,” “curiosity” and “good listening skills.” All these responses seem to lead to the understanding that people behaviors are important to collaborative success.

4. Question 5

Question 5: What behaviors or abilities are barriers to collaboration?

This question assessed respondents’ perceptions of individual and organization characteristics that impede collaboration. In analyzing themes for question five, the framework from Hocevar, Thomas and Jansen (2006) used for question four was used.

While some answers were clearly opposites of the success factors seen in the previous questions, other answers introduced organizational and individual ideas that were not simply opposites.

a. Purpose and Strategy

Thirty-four percent of responses represented the theme of not developing or aligning purpose and strategy. Not aligning purpose and strategy was predominantly attributed to the prevalence of silos or stovepipes in organizations and regions. The sub-theme that was mentioned the most, silos, was characterized as a “single discipline

perspective,” as well as a “mentality,” as evident in “individuals or agencies,” and as being “only concerned about self.” More pointedly, silo agencies were viewed as having the idea that “we can do it alone, we have all the answers” or as having a “leadership [that] only wishes to consider their jurisdictional boundaries.”

A lack of awareness of others’ initiatives, which led to non-alignment of purpose and strategy, was described as being “too busy with regular duties to build relationships and spend time on regional efforts,” as well as “lack of understanding” of other programs were stated as causes. Lack of interest as a barrier, perhaps indicating a lack of felt need, was observed as “not reaching out,” “complacency,” concern for “local control” or a “political agenda—worrying only about your own agency/jurisdiction needs and not the big picture.” Other ideas mentioned were scattered but included grievances heard in organizations: “lack of pride” and “issue-of-the-day approaches.”

b. Structure

Only seven percent of respondents mentioned missing elements of a structure that contributes to collaborative operations. Ideas included “authoritative approach,” implying a hierarchy resistant to a network or collaborative structure and “modifying plans without incorporating committee recommendations.”

c. Lateral Mechanisms

The non-existence of lateral mechanisms, or processes to communicate between collaborative partners and their home agency authorities and resources, was expressed by 15 percent of surveys with the sub-themes of “poor communication” and “lack of understanding.”

d. Incentives

Incentives to participate in the collaborative effort that would be barriers to success predominately were mentioned 38 percent of the time and reflected

territoriality or “turf,” competition and protectionism. “Turf wars” was mentioned the most. Competition was expressed as “players (jurisdictions/agencies) comparing what awarded with others.”

e. People

People behaviors that would inhibit collaborative success were the largest category in this question at 55 percent. Responses included sub-themes of ego, poor effort or competence and personal turf. Ego was clearly the most concern to respondents. In fact, it was emphasized several times: “ego!!!” and “got to rein in the ego!” In addition, the lack of competence was expressed as “failure to carry your own water,” as well as “failure to see the big picture.” A number of personal characteristics were mentioned as well, such as “close mindedness,” “not listening,” “lack of trust” and “individual agendas.”

5. Question 6

Question 6: When it is at its best, what would a successful collaboration look like?

The IOM model (Figure 6) was used as a framework for questions two and three and was again used for question six.



Figure 6. IOM Process Model (From IOM, 2002)

Table 7 displays key themes from the responses to question six. Respondents seem to have a picture of how they would like their collaborative effort to run at a most basic level. One respondent portrayed successful collaboration as “Multi-discipline and multi-jurisdiction participation, strategic planning to link local, regional, state, multi-state and federal priorities for emergency preparedness and response to make the area safer and more resilient.”

Table 7. Themes Describing What Successful Collaboration Would Look Like

<u>IOM Preparedness Indicator Categories</u>	<u>Themes</u>
Inputs	<i>Unified perspective</i>
	<i>Resource sharing</i>
Processes	<i>Joint planning</i>
	<i>Consensus development</i>
	<i>Regular interaction</i>
Outputs	<i>Joint operations</i>

a. Inputs

Participants named a number of inputs that would help create a successful collaboration. Some were tangible; some were intangible. Moreover, some inputs were related to individuals' behaviors. For example, "A group of individuals that respect the needs of others and are able to prioritize the overall needs for the greater good of the area represented." In addition, some to organizations' behaviors: "Integrated efforts using all the grant funding to best protect the MMRS operational area."

In terms of resources, just over 15 percent included resource sharing as part of a successful collaboration. For example, "Funding decisions faced in well-supported manner," with one idea to:

Have one body, non-political, that oversees all grant funding in region with sub-committees comprised of SME's. Again, keep politics out and make risk the function."

Another opined that the collaboration needed to "share credit and acceptance of the value of contribution."

Ten percent of participants characterized the oversight of a successful collaboration as having a unified perspective. "National and state support is unified" and "unified motivation by all parties, with a common vision" were often stated sub-themes.

b. Process

Joint planning key phrases were indicative of the process to plan, the output of the plan itself, or elements thereof. Nearly 40 percent stated that joint planning and consensus development, “consensus on priorities,” would be part of success. An example from the process of planning:

- “Check out xxxxx county”
- All funding streams are coordinated
- All disciplines represented
- Executive commitment to process
- Mutual respect
- Great leadership
- Commitment from workgroups”

The plan itself was mentioned as a deliverable that ought to be “in sync,” acknowledging the plethora of plans in the homeland security world of local, regional and state governments.

Additional ideas included statements relating to “clarifying focus and inter-relationships—our successful collaboration is building UASI on initial work of MMRS. MMRS allows greater emphasis on pre-hospital care and med surge planning/coordinating initial response to ICS within context of overall strategic plan.”

The key process identified by 22 percent of respondents was having regular or seamless interaction; that is, activities and structure promote working together regularly or in a predictable, ongoing manner. Sub-themes include both tangible events like “regularly scheduled” meetings and intangible behaviors such as “sharing, in a positive manner.” The need for meeting and communication were clearly articulated, along with notions of “cooperation and agreement.”

c. Outputs

Outputs included joint operations, including joint training and exercises to measure plans. Nearly 28 percent of respondents believed that a successful collaboration led to “increased capabilities” and “continued gap filling.”

D. CONCLUSION

Eighty-six percent of 58 participants of the 2009 National MMRS Conference said that their rate of MMRS collaboration was medium or high. Therefore, we know that a large number of MMRSs are engaged in collaborative activities.

Benefits of collaboration were analyzed using the IOM (2002) framework of inputs, processes and outputs. Using these categories, 58 percent of the benefits mentioned were categorized as input factors, 55 percent as process oriented factors, and 21 percent fell into the output category.

Enablers and barriers to collaboration were analyzed using Hocevar et al’s (2006) ICC model. When asked about enablers of collaboration, 51 percent of the themes fell into purpose and strategy, while 15 percent describe structural enablers, 21 percent lateral mechanisms, 17 percent incentives and 48 percent mentioned people behaviors that acted as enhancers. When assessing barriers to collaborations, 34 percent related to purpose and strategy, only seven percent to structure, 15 percent to lateral mechanisms, 38 percent to incentives and 55 percent mentioned people behaviors as barriers.

Lastly, when asked to describe the ideal collaboration, respondents’ ideas were categorized using the IOM (2002) model. Twenty-five percent of resulting ideas were input related: resource sharing and unified perspective. Process factors of joint planning and regular interaction comprised 62 percent of ideas, and 28 percent were categorized as output factors: increased capabilities and gap filling.

The themes from questions two and three are presented with those of question six in Table 8.

Table 8. Themes of Motivators and Benefits and Themes of Idealized Collaboration Appearance

<u>IOM Preparedness Indicator Categories</u>	<u>Themes from Q2 and 3 – Why Collaborate?</u>	<u>Themes from Q6 – Benefits of Collaboration</u>
Inputs	<i>Economy of scale</i>	<i>Unified perspective</i>
	<i>Avoid duplication</i>	<i>Resource sharing</i>
	<i>Leverage strengths</i>	
	<i>Share best practices</i>	
	<i>Obtain more funding</i>	
Processes	<i>Strategically plan</i>	<i>Joint planning</i>
	<i>Increase preparedness</i>	<i>Consensus development</i>
	<i>Fill gaps</i>	<i>Regular interaction</i>
	<i>Common goals</i>	
	<i>Enhance interoperability</i>	
Outputs	<i>Increase capabilities</i>	<i>Joint operations</i>

The results of this survey were then used to help craft the questions for the Delphi survey to be discussed in the next chapter.

THIS PAGE INTENTIONALLY LEFT BLANK

V. METHOD AND RESULTS—DELPHI SURVEY

A. INTRODUCTION

This chapter describes the research method used to gather and analyze data for the research question: “How can Metropolitan Medical Response System (MMRS) agencies in a region collaborate to address mission gaps and overlaps?” The subordinate questions are:

- What would be the benefits of effective collaboration among MMRSs and UASI in this region?
- How would collaboration increase or decrease operational (emergency response) capacity?
- How would collaboration address gaps and overlaps in planning?
- What would successful collaboration look like?
- How can the gap between the current state and the ideal state be narrowed or filled?
- How can alignment between MMRS and UASI be created?
- What are the enabling factors for improving collaboration in the San Francisco Bay Area?
- What are the barriers to collaboration in the San Francisco Bay Area?

The method and results presented in this chapter build on the data gathered from a national sample of MMRS subject matter experts and described in Chapter IV. Those data were used to inform questions incorporated into a two-round Delphi survey that was distributed to San Francisco Bay Area MMRS and UASI subject matter experts. The responses to the Delphi survey were analyzed and coded for themes that are delineated and interpreted in this chapter.

B. DELPHI SURVEY METHOD

The Delphi survey method was developed in the 1950s by the Rand Corporation (Cuhls, 2003). The Delphi technique is considered beneficial when dealing with complex issues (Ono & Wedemeyer, 1994) and there is a lack of empirical evidence (Murphy et al., 1998). The Delphi is based on structural surveys and makes use of the subject matter expertise of the selected participants. After a first round of questions, the results are fed back to the participants with more questions in one or more subsequent rounds. Thus, the participants can integrate the anonymous views of their peers as they respond and can also influence or be influenced by those views (Cuhls, 2003).

Questions for Round One of the Delphi survey were based on the categories and themes developed from the literature review and the survey data from the MMRS National Conference described in Chapter IV. As the survey was drafted, it was piloted with several MMRS staff from outside of the sample area to clarify the intent and wording of the questions in the survey. The pilot process resulted in several small edits to the survey questions. The first round questions were framed on perceived benefits of collaboration or “Why should we collaborate?” The first round consisted of 24 rated questions addressing two broad categories: (1) motivation to collaborate and (2) ability to achieve results from collaboration. Additionally, open-ended questions allowed respondents to provide specific example or explanation of the rated responses, including four to solicit input on additional benefits, challenges and success factors. The final question addressed demographics.

The survey was sent to a group of 27 homeland security professionals from MMRS agencies and the UASI staff in the San Francisco Bay Area (typically mid-manager positions such as fire assistant chief, police captain, public health nurse, city or county emergency manager). The respondents were polled using an online survey tool. Initially, an e-mail introducing the survey and asking for participation in Round One was sent, followed two weeks later by the actual link to the survey and the request to complete it within three weeks. The introductory e-mail is found in Appendix B. The

response rate was initially low, so three reminder e-mails were sent over a two-week period. The survey was closed five weeks after being distributed. Fifteen of the 27 professionals (56 percent) responded.

The questions that were asked in Round One are in Appendix C. One example of one rating and one open-ended question from round one are presented in Table 8. The first question had 12 potential motivating factors for collaboration, two of which are illustrated in Table 9. The second question then asked the extent to which the benefits of collaboration used in question one are perceived as achievable. The four open-ended questions followed. The first asked for example benefits of Bay Area MMRS/UASI collaboration other than those listed in the two preceding rating questions. This question was followed by an open-ended question asking for downsides or costs of Bay Area collaboration. The final two questions sought respondents' ideas about major challenges of Bay Area collaboration and enhancers of Bay Area MMRS/UASI collaboration.

Table 9. Example Delphi Survey Round One Questions

Recently, a national sample of MMRS officials was asked, “Why should MMRSs collaborate with each other, or with UASI?” Officials from a national sample responded with a number of themes. The following questions are based on their responses. Please take a few minutes to indicate the importance of each issue and provide a brief comment.	
1. Motivation to collaborate - How important would each of these achievements be in motivating your organization to engage in collaboration with other SF Bay Area MMRSs and/or the SF Bay Area UASI?	
a. Reducing program overlaps (e.g., redundant plans)	Not important at all – Extremely important 1 – 2 – 3 – 4 – 5 – 6
Please explain or give specific example of potential benefit	
b. Filling gaps (e.g., deliverables not met)	Not important at all – Extremely important 1 – 2 – 3 – 4 – 5 – 6
Please explain or give specific example of potential benefit	
2. What other benefits are to be gained from a SF Bay Area MMRS/UASI collaboration?	

True to the Delphi method, the results were fed back to respondents, and other or more specific aspects of the problem were probed. In the second round of the Delphi survey, responses to Round One questions informed the development of Round Two questions. The primary research question, “How can Metropolitan Medical Response

System (MMRS) agencies in a region collaborate to address mission gaps and overlaps?,” also informed the development of the second round of questions, particularly in terms of the process to perform collaborative activities. Round Two consisted of 12 questions, plus the same demographic question used in Round One. Following analysis of the data and development of the second round survey questions, the same 27 homeland security professionals received the Round Two survey. In Round Two, 20 people (74 percent) responded by the end of a two-week deadline. (See Appendix C for a complete presentation of the Round Two survey).

An example of one rating and one open-ended question from Round Two is displayed in Table 10. The second round began with presentation of data from the first round on activities that could motivate collaboration and then asked two open-ended questions to solicit priorities among those activities. The next two questions presented themes from the first round concerning downsides and challenges to collaboration and asked respondents to rate the impact of those themes on motivation to collaborate. Two open-ended questions then asked respondents to estimate if the challenges were insurmountable and to offer ideas on how those downsides might be overcome. Themes from the first round that identified enablers for collaboration were next presented, and one question asked the respondents to rate the presence of those themes within the Bay Area agencies. Respondents next were asked to identify the way ahead, given the data so far, and to identify any local, successful collaborative efforts with which they were familiar. The final question addressed demographics.

Table 10. Example Delphi Survey Round Two Questions

1. In the first round of survey, you were asked to rate activities that would motivate you to engage in collaboration with other SF Bay Area MMRSs and/or the Bay Area UASI. Over 50% of you responded, and the information below displays the average ratings from your replies.

The results are listed in order of importance. The average of your ratings follows each in parentheses. The ratings are on a scale of 6 (extremely important) to 1 (not important). For example, “a. conducting joint training” was rated as the activity that could most motivate MMRS/UASI members to collaborate.

	Activities which could motivate collaboration	Avg. Rating
	Conducting joint training	5.5
	Developing common standard operating procedures	5.3
	Developing a regional MMRS plan.	5.3
	Receiving MMRS mutual aid	5.3
	Developing a unified regional strategy	5.3
	Reducing program overlaps (e.g., redundant plans)	5.1
	Filling gaps (e.g., deliverables not met)	4.9
	Providing MMRS mutual aid to uncovered neighbors	4.8
	Developing a unified perspective on MMRS mission in SF Bay Area	4.7
	Merging funding streams from several sources to meet deliverables	4.6
	Gaining economy of scale (e.g., purchasing supplies, staffing)	4.2
	Increasing MMRS capabilities	4.1
	Do any of the results surprise you? Please explain if yes.	
2.	<p>The following themes of downsides or costs to Bay Area MMRS-UASI collaboration were noted in the first round. Rate them in terms of impact to your agency's motivation to collaborate. If you feel there are no downsides or costs to Bay Area MMRS-UASI collaboration, please skip this question and go to the next.</p> <p>a) Administrative complexity—getting things done may be slower 1-2-3-4-5-6</p> <p>b) Loss of local perspective or ability to manage for local needs 1-2-3-4-5-6</p> <p>c) Loss of staff time for other projects 1-2-3-4-5-6</p> <p>d) No downside or cost 1-2-3-4-5-6</p>	

C. DELPHI SURVEY ROUND ONE RESULTS

This section presents each question from Round One and the results obtained. The round was centered on motivators to collaborate, as well as barriers and enablers. In several questions, data were mapped against one of the two models used in the previous chapter: the IOM (2002) process model or Hocevar et al.'s (2006) interagency collaborative capacity model.

1. How Important Would Each of These Achievements Be in Motivating Your Organization to Engage in Collaboration With Other SF Bay Area MMRSs and/or the SF Bay Area UASI?

Participants were asked to rate on a scale of one (not important) to six (extremely important) 12 achievements that may motivate them to engage in collaboration. These ratings sought to define the degree to which each choice would motivate the respondent to collaborate. An open-ended question was provided for each choice to encourage the provision of examples or explanation for the rating given. Table 11 displays results in order of average rating of importance, from highest to lowest.

Table 11. Ratings of Achievements to Motivate Collaboration

Collaborative Benefit	Percentages						Rating Average	Std Dev
	Not Important	2	3	4	5	Extremely Important		
Conducting joint training	0%	0%	0%	13%	27%	60%	5.5	3.6
Developing common standard operating procedures	0%	0%	7%	13%	20%	60%	5.3	3.4
Developing a regional MMRS plan.	0%	0%	0%	13%	47%	40%	5.3	3.2
Receiving MMRS mutual aid	0%	0%	7%	7%	40%	47%	5.3	3.1
Developing a unified regional strategy	0%	0%	7%	7%	40%	47%	5.3	3.1
Reduce fully accomplished program overlaps (e.g., redundant plans)	0%	0%	13%	13%	27%	47%	5.1	2.7
Filling gaps (e.g., deliverables not met)	0%	0%	13%	7%	60%	20%	4.9	3.4

Collaborative Benefit	Percentages						Rating Average	Std Dev
Providing MMRS mutual aid to uncovered neighbors	0%	0%	7%	27%	47%	20%	4.8	2.7
Developing a unified perspective on MMRS mission in SF Bay Area	7%	0%	7%	13%	53%	20%	4.7	2.9
Merging funding streams from several sources to meet deliverables	0%	0%	33%	0%	40%	27%	4.6	2.8
Gaining economy of scale (e.g., purchasing supplies, staffing)	7%	7%	13%	20%	40%	13%	4.2	1.9
Increasing MMRS capabilities	0%	7%	20%	33%	33%	7%	4.1	2.2

The highest rated motivators to collaboration of the choices presented were conducting joint training, developing common standard operating procedures, developing a regional MMRS plan, receiving MMRS mutual aid, and developing a unified regional strategy. The lowest motivators to collaboration were increasing MMRS capabilities and gaining economy of scale. When asked to explain or give specific examples of potential benefits in the above categories, respondents provided themes as shown in Table 12.

Table 12. Themes from Round One—Potential Specific Benefit of Collaboration

Potential Benefit	<i>Specific Examples or Explanation of Benefit</i>
Conducting joint training	<i>Share information Reduce costs Common standards Pre-emergency preparedness</i>

Potential Benefit	<i>Specific Examples or Explanation of Benefit</i>
Developing common standard operating procedures	<i>Lead to efficiency at drills and events Help work more effectively together</i>
Developing a regional MMRS plan	<i>Better cooperation Joint training Common operating picture Seamless integration in the event of mutual aid Leverages all resources (equipment and funding)</i>
Receiving MMRS mutual aid	<i>Better performance</i>
Developing a unified regional strategy	<i>Most beneficial delivery Each MMRS can develop its own mission Develop meaningful interrelationships</i>
Reducing program overlaps (e.g., redundant plans)	<i>Better performance Concept of operations that is recognized as a standard Reducing duplicated overhead costs Redundant plans and programs</i>
Filling gaps (e.g., deliverables not met)	<i>Establishing deliverables that are designed to fill gaps are what is important</i>
Providing MMRS mutual aid to uncovered neighbors	<i>Should be part of the Master Mutual Aid system</i>
Developing a unified perspective on MMRS mission in SF Bay Area	<i>Redundant efforts would be less and dollars better used Common operating picture. Each jurisdiction's perspective needs to be part of the overall mission.</i>
Merging funding streams from several sources to meet deliverables	<i>Decrease duplication of effort Coordinating funding streams and deliverables as well Provides planning flexibility</i>
Gaining economy of scale (e.g., purchasing supplies, staffing)	<i>Maximize purchasing ability Existing programs work for this purpose</i>
Increasing MMRS capabilities	<i>At capability</i>

Using the IOM model (IOM, 2002), the categories of input, process and outputs, the higher rated elements appear to relate to processes and inputs; that is, the resources and work necessary to ensure successful outputs. In a large sense, this aligns with the perspective of the national MMRS sample presented in Chapter IV.

The higher rated items represent actions often found in public safety agencies. Since the Bay Area MMRSs are led wholly or in part by fire departments, it does not seem unusual to view them as motivators. The notion of a regional plan acknowledges

the complexity of the region in terms of number of agencies and jurisdiction, as well as accepts the idea that one entity may not be able to handle all incidents alone. There were some minority opinions expressed within the above themes that spoke to the importance of maintaining the unique perspective of each member as collaboration was attempted. There was also one remark on the difficulty of achieving some of these ideas.

2. To What Extent Do You Believe That Your Agency Could Actually Achieve Each of the Following Results From Collaboration With Other SF Bay Area MMRSs and/or the SF Bay Area UASI?

This question sought to capture the estimation of the subject matter experts on the ability to achieve results if collaboration occurred. Participants were asked to rate on a scale of one (no achievement) to six (full achievement) 12 results that they believed could be had by collaboration. These ratings sought to define the degree to which a collaborative effort might be productive in several areas of work. An open-ended question was provided to allow respondents to explain any low ratings (one to three) and to gauge why the respondents felt that collaboration would not help in an endeavor. Table 14 displays results in order of the average believed achievability, from highest to lowest.

Table 13. Ratings of Likelihood of Achieving Specific Benefits Due to Collaboration

Collaborative Activity	Percentages						Rating Avg.	Std Dev
	No Achievement	2	3	4	5	Full Achievement		
Conducting joint training	0%	0%	0%	27%	53%	20%	4.9	3.2
Developing a unified regional strategy	0%	0%	0%	27%	60%	13%	4.8	3.6
Developing common standard operating procedures	0%	0%	7%	27%	40%	27%	4.8	2.5
Receiving MMRS mutual aid	7%	0%	7%	14%	57%	14%	4.6	2.9
Increasing MMRS capabilities	0%	0%	20%	20%	53%	7%	4.5	3.0

Collaborative Activity	Percentages						Rating Avg.	Std Dev
	No Achievement	2	3	4	5	Full Achievement		
Developing a regional MMRS plan.	0%	7%	20%	13%	47%	13%	4.4	2.4
Filling gaps (e.g., deliverables not met)	0%	7%	20%	27%	40%	7%	4.2	2.3
Developing a unified perspective on MMRS mission in SF Bay Area	13%	7%	0%	20%	53%	7%	4.1	2.9
Reducing program overlaps (e.g., redundant plans)	0%	13%	27%	13%	47%	0%	3.9	2.7
Merging funding streams from several sources to meet deliverables	0%	13%	27%	20%	33%	7%	3.9	1.9
Gaining economy of scale (e.g., purchasing supplies, staffing)	7%	0%	40%	13%	40%	0%	3.8	2.8
Providing MMRS mutual aid to uncovered neighbors	7%	7%	33%	13%	40%	0%	3.7	2.4

Overall, ratings were lower in this set of questions than in the first set. The respondents seemed to assess that while they could be motivated to collaborate around these ideas, the likelihood of achieving them was somewhat lower. The highest benefits in terms of likelihood are *conducting joint training*, *developing common standard operating procedures*, and *developing a unified regional strategy*. The lowest benefits in terms of likelihood are *providing MMRS mutual aid to uncovered neighbors*, *gaining economy of scale*, *merging funding streams from several sources to meet deliverables* and *reducing program overlaps (e.g., redundant plans)*.

Respondents were asked to explain any ratings between one and three to gauge why they felt collaboration would not help achievement. These data were mapped against Hocevar et al.'s (2006) interagency collaborative capacity model. Of the 12 reasons offered, 34 percent reflected difficulty in purpose and strategy (e.g., "too open ended").

This sentiment is in opposition to the domain characteristic of having clearly established goals. Twenty-five percent of the reasons related to people. For example, “I do not agree with the perspective presented here” demonstrates “a lack of appreciation for another organization’s perspective on a problem or course of action” (Jansen et al., 2008, p. 21). The response “MOUs would have to be written” is an example of 17 percent of the responses that represented structural flexibility, in this case an opposite to an organization “being flexible in adapting its procedures to better fit...” (Jansen et al., p. 15). Finally, eight percent of responses concerned lateral processes, such as a “lack of success of other attempts,” which seemed to represent a lack of “initiative to build relationships” (Jansen et al., p. 20).

The highest ratings in both question one, achievements that would motivate collaboration, and question two, likelihood of achieving specific benefits due to collaboration were:

- *Conducting joint training,*
- *Developing common standard operating procedures, and*
- *Receiving MMRS mutual aid.*

The lowest ratings in both question one, achievements that would motivate collaboration, and question two, likelihood of achieving specific benefits due to collaboration were:

- *Providing MMRS mutual aid to uncovered neighbors, and*
- *Merging funding streams from several sources to meet deliverables.*

The likely potential achievements remain quite similar to achievements that are motivators for collaboration. The lower ratings could acknowledge the work required to enact any of the items. As noted in the literature review, agencies often prefer to work alone, and collaboration can be more demanding.

The survey then asked a series of open-ended questions; the results follow.

3. What Other Benefits Are to Be Gained From a SF Bay Area MMRS/UASI Collaboration?

This question is similar to one posed to the national MMRS sample. In this part of the research the purpose was to search for locally specific perspectives on benefits from collaborating. Such benefits can act as motivators to collaboration. The literature review revealed that partners of collaborative efforts engage for a variety of reasons, and that those reasons generally lead to some type of perceived benefit. The responses to this question were analyzed for themes using the IOM process model used in Chapter III. The IOM model (Figure 7) uses proxy outputs for those rarely seen because of the infrequency of CBRNE events.



Figure 7. IOM process model (From IOM, 2002)

Of 16 discrete ideas found in the responses to this question, three pertain to inputs, nine to process, and four to outputs.

a. Inputs

Three responses (19 percent) from Bay Area SMEs were concerned with inputs, specifically sharing information, gaining economy of scale and leveraging funding sources.

b. Process

Nine responses (57 percent) were concerned with aspects of process; planning strategically appeared twice as did building relationships. The other responses included getting other disciplines involved, building team efforts and “anything to increase capacity to function in a multi-agency ICS environment.”

c. Outputs

Four responses (25 percent) stated that outputs were the benefit to be gained from a regional MMRS/UASI collaboration. All four were concerned with better overall performance of the system during an emergency. The results were different than those from the national survey in that the Bay Area group saw process and outputs benefits as more valuable than input benefits.

4. What Might Be the Downsides or Costs of SF Bay Area MMRS/UASI Collaboration?

This question was placed in Round One in response to concerns from the pilot process that the appreciative tone of questions to this point may be communicating a bias to respondents. This question was intended to allow the respondents to express a position that collaboration may not be a completely beneficial choice. Thirteen individual ideas were received.

Four (31 percent) of the responses to this question acknowledged that “getting things done” would become more complex, although one of those respondents also acknowledged it would be worth the effort. Three responses (23 percent) stated there would be no downside or cost. In contrast, two (15 percent) felt that the loss of local perspective, or the ability to manage based on local needs, might be a downside, although one implied that common goals and shared vision would still be valuable. Another two (15 percent) saw the loss of staff time for other projects and increase in staff costs as a downside.

While some respondents advanced clear concerns, they were for the most part tempered by the acknowledged benefits of collaboration.

5. What Would Be the Major Challenges of Starting a SF Bay Area MMRS/UASI Collaboration?

Answers to this question were mapped against Hocevar et al.’s (2006) interagency collaborative capacity model. Challenges were seen in this context as potential barriers to a collaborative effort as opposed to enablers. The largest number of responses, 42

percent, indicated that structure was the major challenge, for example “maintenance of group momentum” and “pushing it through the chain of command.” Fundamental structuring activities for collaboration, such as goal setting, role definition and agency support, found in a variety of the literature, seem to weigh the most in respondents’ analysis. Thirty-eight percent of respondents felt that purpose and strategy could be a challenge due to the challenges of “getting all the players to participate” and “divergent priorities.” The other three categories, lateral processes, incentives and people, each had four percent, or one response each.

6. What Would Enhance the Success of a SF Bay Area MMRS/UASI Collaboration?

Again, answers to this question were mapped against Hocevar et al.’s (2006) interagency collaborative capacity model; enhancers were seen in this context as a potential enablers to a collaborative effort. The largest number of responses, 55 percent, indicated as in the last question that structure was the major source of success, such as “flexibility” and “definition of roles in advance.” Three categories each received 15 percent of responses: purpose and strategy, e.g., “clarity of purpose,” incentives, e.g., “commitment/support from organizational leadership,” and people, e.g. “communication and cooperation.” Lateral processes were not identified in the responses to this question.

D. DELPHI SURVEY ROUND TWO RESULTS

This section presents each question from Round Two and the results obtained. The same set of 27 homeland security professionals received Round Two of the survey. By the closing date, 20 (74 percent) had responded. The purpose of Round Two was to summarize and highlight responses from round one and use the Round One response as a basis for additional inquiry and refinement of the results. In several questions data were mapped against one of the two models used in the previous chapter: the IOM (2002) process model or Hocevar et al.’s (2006) interagency collaborative capacity model.

1. In the First Round of the Survey, You Were Asked to Rate Activities That Would Motivate You to Engage in Collaboration With Other SF Bay Area MMRSS and/or the Bay Area UASI

Over 50 percent of you responded, and the information below displays the average ratings from your replies.

The results are listed in order of importance [Table 14]. The average of your ratings follows each in parentheses. The ratings are on a scale of 6 (extremely important) to 1 (not important). For example, “a. conducting joint training” was rated as the activity that could most motivate MMRS/UASI members to collaborate.

Table 14. Activities Which Could Motivate Collaboration

Activities which could motivate collaboration	Avg. Rating
Conducting joint training	5.5
Developing common standard operating procedures	5.3
Developing a regional MMRS plan.	5.3
Receiving MMRS mutual aid	5.3
Developing a unified regional strategy	5.3
Reducing program overlaps (e.g., redundant plans)	5.1
Filling gaps (e.g., deliverables not met)	4.9
Providing MMRS mutual aid to uncovered neighbors	4.8
Developing a unified perspective on MMRS mission in SF Bay Area	4.7
Merging funding streams from several sources to meet deliverables	4.6
Gaining economy of scale (e.g., purchasing supplies, staffing)	4.2
Increasing MMRS capabilities	4.1

Do any of these results surprise you? Please explain if yes.

This question was based on results from Round One and probed the reaction of the respondents to the group’s aggregate response. Eighteen participants responded. Thirteen (65 percent) of the respondents answered “no;” they were not surprised by the results. Of the five (25 percent) who answered “yes” that they were surprised; two (10 percent) felt that standard operating procedure development was more important; two (10 percent) felt that funding or “economic aspects” should be higher; and one (five percent) stated “filling gaps that had been identified” was the activity that should rise to the top.

2. What Do the Above Results Imply About MMRS and/or UASI Collaboration?

This question solicited the respondents' interpretation of the data from the previous question. Fifteen people (55 percent) responded to this question with 24 ideas. The responses are framed in the IOM model. Within the responses, five ideas (21 percent) related to inputs, 15 ideas related to processes, and four (17 percent) to outputs. Three responses did not directly answer the question but expressed other concerns about a collaborative effort.

The most encompassing response captured several of the themes, such as joint training, mutual aid and fiscal concern:

My interpretation of the results is that agencies want to conduct joint training in order to identify strengths and gaps that can be addressed and incorporated into SOPs and included into a regional MMRS plan. The Plan would also need to include information on requesting, receiving or providing MMRS mutual aid along with legal and financial supporting documentation. Agencies are interested in being fiscally responsible and increasing the capabilities of the MMRS.

a. Inputs

Five of the 24 responses (21 percent) described input-related implications. For example, "maximizing our funding" and the ability to "offset funding gaps" were mentioned. "Being fiscally responsible" was stated as well. More specifically, one respondent observed, "MMRS and UASI funds that support this [*regional*] approach would be the best expenditure." In the national survey, funding was one of several input-related ideas. In this survey question, inputs appear to take a bit more prominence for the Bay Area respondents.

b. Process

Fifteen responses (63 percent) concerned activities related to process. Training was mentioned the most at five times, followed by planning three times, developing standard operational policies, then "common operating picture," "quality,"

“capability improvement,” and “coordinated approach.” An observation was made that the results implied that “It [*collaboration*] is not a priority” and that “MMRS planning has not been integrated with UASI efforts.”

c. *Outputs*

Four responses (17 percent) related to outputs. Needing to do “the greatest good for the largest segment of our population” captures the theme best; it centers on the capabilities of the MMRS programs.

d. *Other Responses*

Three responses did not answer the question directly, but rather expressed concerns about a potential collaboration. The statement “...each region within the UASI can and should utilize UASI funding to leverage MMRS needs (and vice versa)—however, we will not be surrendering local control, use, or planning of MMRS to UASI” captures that perspective.

3. **It Would Be Difficult to Attempt All of These Outcomes. Which Three Would Be Your Top Priority?**

This question sought to assess the actionable priorities of the group. Seventeen respondents answered this question. Table 15 presents the results to this question. The activities to be prioritized are presented with their ranking from Round One in parentheses. The results of this question are presented in weighted and ranked order. The table columns display the number of responses per choice. The responses were then weighted, first choice worth three points, second worth two points, and third worth one point. The sum of the weighted choices is presented as the weighted response.

By weighted response count, *conducting joint training* was clearly the top priority, followed by *developing standard operating procedures* and *developing a regional MMRS plan*. This result aligns with the activities that could motivate collaboration identified in Round One.

Round One and Two results in this area of inquiry begin to diverge below the top three items. Two of the next three, *developing a regional unified strategy* and *receiving MMRS mutual aid*, are in the same middle band for Round One as for Round Two but in a slightly different order. *Reducing program overlaps* has moved down in priority in Round Two as compared with Round One. It could be that the Round Two results seemed less actionable in the view of the respondents; therefore they would rate it as a lower priority.

The divergence between Round One and Round Two results continues to the end of the list. In one sense, the band of results is similar but specific perspectives change. *Merging funding* and *increasing MMRS capabilities* rise in Round Two as priorities for action, while *filling gaps*, *providing MMRS mutual aid to uncovered neighbors*, and *gaining economy of scale* all fell in Round Two as priorities for action versus achievements that could motivate collaboration in Round One.

In Round One, respondents were asked to rank the activities that could motivate collaboration; in Round Two, they were forced to choose three activities to attempt. The difference between the results to the two questions may lie in the respondents' perceptions of the difficulty of implementation or other agencies' influences.

Table 15. Priorities of Outcomes to Attempt

Activities (Avg Rating)	1st priority	2nd priority	3rd priority	Weighted Priority
Conducting joint training (5.5)	3	4	5	22
Developing common standard operating procedures (5.3)	2	6	1	19
Developing a regional MMRS plan. (5.3)	4	1	2	16
Developing a unified regional strategy (5.3)	3	1	2	13
Developing a unified perspective on MMRS mission in SF Bay Area (4.7)	2	2	1	11

Activities (Avg Rating)	1st priority	2nd priority	3rd priority	Weighted Priority
Receiving MMRS mutual aid (5.3)	1	1	1	6
Merging funding streams from several sources to meet deliverables (4.6)	0	2	2	6
Filling gaps (e.g., deliverables not met) (4.9)	1	0	0	3
Increasing MMRS capabilities (4.1)	1	0	0	3
Reducing program overlaps (e.g., redundant plans) (5.1)	0	0	1	1
Providing MMRS mutual aid to uncovered neighbors. (4.8)	0	0	1	1
Gaining economy of scale (e.g., purchasing supplies, staffing) (4.2)	0	0	1	1

4. The Following Themes of Downsides or Costs to Bay Area MMRS-UASI Collaboration Were Noted in the First Round

Rate them in terms of impact to your agency's motivation to collaborate. If you feel there are no downsides or costs to Bay Area MMRS-UASI collaboration, please skip this question and go to the next.

- a) Administrative complexity – getting things done may be slower**
- b) Loss of local perspective or ability to manage for local needs**
- c) Loss of staff time for other projects**
- d) No downside or cost**

Respondents again were given results from Round One: themes of potential downsides or costs to collaboration. In this question they were asked to rate them on a scale of one (not a deterrent to collaboration) to six (extreme deterrent to collaboration). Sixteen responses to this question were received. Table 16 presents the results based on

average ratings. An open-ended question allowed respondents to specify other downsides not captured in Round One, with the ability to rate them with the other downsides presented.

Table 16. Activities That Could Deter Participation In A Collaborative Effort

Downside	Percentages						Average Rating	Std Dev.
	Not a Deterrent	2	3	4	5	Extreme Deterrent		
Loss of local perspective or ability to manage for local needs	7%	33%	20%	0%	0%	40%	3.7	2.6
Loss of staff time for other projects	7%	14%	36%	7%	14%	21%	3.7	1.5
Administrative complexity — getting things done might be slower	13%	25%	19%	0%	19%	25%	3.6	1.5

All three of the downsides presented from Round One, *loss of local perspective or ability to manage for local needs*, *loss of staff time for other projects* and *administrative complexity* have approximately equal average ratings as a deterrent to collaboration. The three options were separated by 0.1 points in the rating. However, it is noteworthy that the *loss of local perspective or ability to manage for local needs* has the highest percentage in the “extreme” deterrent category.

Four respondents included other downsides as deterrents and gave them ratings while five simply listed additional deterrents to collaboration. Three of the other downsides concerned loss of funding or addition of unfunded activities, particularly training. These additional items came from three different disciplines, and all ranked this downside as a high (5) or extreme (6) deterrent. One other downside suggested that some capability overlap may exist and that MMRS and UASI activities should blend with existing systems. It was presented as a moderate deterrent (3).

The additional and unrated themes gathered in this open-ended question included

- “Identifying and funding an employee to manage the program,”
- “Losing the ability to manage our own destiny”
- “Impact on other UASI projects that may have a higher priority”

Two other responses identified training funding challenges as well.

5. I Feel There Are No Downsides or Costs to Bay Area MMRS-Collaboration

Thirteen answered this question. Forty-six percent answered yes, that there are no downsides, while 54 percent answered no. The previous question captured specific downsides.

6. The Following Challenges to Bay Area MMRS-UASI Collaboration Were Generated From the First Round

Rank them from 1 through 5 in order of negative impact to your agency's motivation to collaborate (1st = highest deterrent to collaboration, 5th = least deterrent to collaboration).

- a. **divergent goals, mission drift, diverse set of organizations**
- b. **lack of time, need for leader support, maintaining momentum**
- c. **competition between groups**
- d. **personalities**
- e. **other challenges (please list below)**

This question sought the group's assessment of data from the first round, specifically by ranking the five collaborative challenges from most to least in terms of deterrence. The number of responses to each choice was weighted: the highest at five down to the lowest at one. The weighted responses to each choice were totaled giving a weighted response to each potential challenge to collaboration. The results are presented in ranked order in Table 17.

Within the responses, there were different priorities and observations. The highest deterrents are related to the Structure and Incentives domains of Hocevar et al.'s (2006) ICC model, specifically *lack of time, need for leader support* and *maintaining momentum*. The next highest deterrent is found in the model's Purpose and Strategy domain: *divergent goals, mission drift, diverse set of organizations*. Another Incentives' domain concern, *competition between groups*, follows at the same weighted ranking. Finally, *personalities and skills*, People domain elements followed some distance away as the lowest ranked deterrent to collaboration.

Table 17. Challenges That Could Deter Collaboration

Challenges	Number of responses at each rank					Weighted Deterrent
	Highest Deterrent to Collaboration	2 nd	3 rd	4 th	Lowest Deterrent to Collaboration	
Lack of time, need for leader support, maintaining momentum	8	2	3	3	1	64
Divergent goals, mission drift, diverse set of organizations	5	4	5	1	1	59
Competition between groups	3	5	7	1	1	59
Personalities and skills	0	2	1	10	2	33
Other Challenges (please specify below)	1	3	0	0	3	20

Other challenges to collaboration identified in the open-ended follow up included:

- “Financial challenges,”
- “Governance structure,”

- “Cost to agencies,”
- “Competition for UASI funds,”
- “Loss of funding...if MMRS is integrated with UASI,”
- “Not knowing why there is a need for collaboration...”

These other challenges map to the Hocevar et al. (2006) model in the same way as the challenges in the previous question, with the same domains of Structure, Purpose and Strategy appearing, as well as Incentives. It appears that the respondents desire support, such as time and authority to work on the effort, from their agency leaders as a condition of committing to a collaborative effort, followed equally by a need to clarify a common goal or purpose and an acknowledgement that they may have to attend to competition. There is a lower ranked challenge of people issues noted by the group as well.

7. Are the Above Challenges Insurmountable? Why or Why Not?

This open-ended question resulted in 13 responses. Of the 13, 10 (77 percent) clearly answered “no,” while two (15 percent) answered “yes” and one did not answer clearly, although it seemed to be closer to “yes.” Most of the answers were qualified. Supporting observations revealed 10 themes, which were framed again in the Hocevar et al (2006) model. Of the observations made to support responses that believed the challenges were not insurmountable, eight related to Purpose and Strategy, such as “need to agree on the mission” and ensuring that the collaborative effort is a “priority.” Another observed that the effort “...will need strong leadership skills for the group and from each MMRS entity.” Two responses related to Structure—“coordination and sustainment will be the keys to success.” Interestingly, the opposite view was also expressed, “the challenges are insurmountable because there are too many goals, from all the diverse jurisdictions.”

8. How Can These Challenges Be Overcome?

This open-ended question solicited the solutions to collaborative challenges from participating subject matter experts from the region. It is likely that these solutions could

play a role in moving a collaborative effort forward. Fifteen people responded to this question with 20 ideas. The ideas they generated and the related ICC category are summarized below. Again, the Structure and Purpose and Strategy domains appear to take precedence, encompassing over half of the ideas submitted (Table 18).

Table 18. How Challenges Can be Overcome

Idea Theme	Percentage of Responses	ICC Category (Hocevar et al. 2006)
Meet regularly	30%	Purpose & Strategy
Obtain executive buy-in	25%	Purpose & Strategy
Plan together	10%	Purpose & Strategy
Use strong people/leadership skills	10%	People
Exercise	5%	Purpose & Strategy
Build on successes	5%	Lateral Processes
Change funding scheme to contract vs grant	10%	Structure
Cannot be done	5%	Barrier

9. The Following Factors That Can ENABLE Successful Bay Area MMRS-UASI Collaboration Were Generated From the First Round

Rate the Extent To Which You Think These Success Factors Are Present in the MMRS and UASI Organizations in the Bay Area.

- 1. Acknowledged common goals, shared vision**
- 2. Formal opportunities to set goals for collaboration**
- 3. High level commitment**
- 4. Flexibility**
- 5. Support from administration**
- 6. Communication, cooperation, handle conflicts constructively**
- 7. Other enabling factors (please list)**

Sixteen respondents answered this question. Participants were presented a list of collaborative enablers developed from Round One of the survey. Participants were asked

to rate on a scale of 1 (not present) to 6 (fully present) the presence of these enablers. These ratings sought to define the degree to which collaborative enablers are present in the MMRS and UASI organizations.

Table 19 displays the data. Mapping to the Hocevar et al (2006) ICC model, three of the choices generated from the first round lie in the domain of Structure: *Opportunities to set goals, flexibility and high-level commitment*. The other choices relate to People and to Purpose and Strategy. Therefore, the responses appear again to reinforce the same domains as important, although the single idea that received the highest response of being present was the People domain idea of *communication, cooperation and handling conflicts constructively*. This mirrors the results presented in the previous section where the People domain (e.g., abilities) were ranked as the lowest deterrent to collaboration.

Table 19. Presence of Factors that Enable Collaboration

Enabling Factors	Percentages						Average Rating	Std Dev.
	Not Present	2	3	4	5	Fully Present		
Communication, cooperation, handle conflicts constructively	13%	6%	13%	19%	38%	13%	4.0	1.8
Acknowledged common goals, shared vision	25%	0%	13%	31%	19%	13%	3.6	1.8
Formal opportunities to set goals for collaboration	0%	31%	25%	25%	13%	6%	3.4	2.0
Flexibility	13%	19%	19%	25%	19%	6%	3.4	1.0
High level commitment	19%	19%	13%	25%	19%	6%	3.3	1.0
Support from administration	19%	19%	25%	25%	6%	6%	3.0	3.0

10. Given the Data on Benefits, Challenges, and Success Factors, What Would You Identify As the Appropriate Agenda for Collaboration Between The MMRSS and UASI? In Other Words, What Is the Way Ahead?

Sixteen people answered this open-ended question. The purpose was to have the respondents process the information they had received and propose what the group would do to actually engage in a collaborative effort. Using the Hocevar et al. (2006) model, out of 40 ideas presented by respondents, 20 (50 percent) related to purpose and strategy, 10 (25 percent) to lateral processes, seven (18 percent) to incentives and three (eight percent) to structure.

As summarized in Table 20, the ideas related to Purpose and Strategy included performing a gap analysis, five ideas for common goal setting (strategic collaboration), and six ideas for regional plans or SOPs. Lateral process related notions concerned “increased communication.” Incentives domain ideas included getting executive support, as well as two potentially barrier-related ideas: “identify any items up front that would be a deal-killer for any of the MMRS entities” and “build local (and thereby regional) capabilities.” The first considers issues that could preclude executive or agency support, while the second could result in a focus on local *over* regional concerns, instead of local concerns as an enabling objective to satisfy regional concerns. The Structure ideas were concerned with selecting or establishing the group to perform this work.

Table 20. Agenda Ideas for Bay Area MMRS and UASI Collaboration

Collaborative Capacity Domain (Hocevar et al 2006)	Number of Responses	Examples of ideas
Purpose and Strategy	20	Regional plans or SOPs Strategic collaboration Perform gap analysis
Lateral Processes	10	Increased communication
Incentives	7	Acquire executive support
Structure	3	Group membership and selection

11. Are There Models in Our Region of Successful Collaboration? Please Name Them.

This question sought to gauge participants' awareness of local or regional collaborative efforts that could be used as example or model for potential collaborative activities in the SF Bay Area MMRS and UASI. Twelve responses were received. The examples specifically named are:

- San Francisco MMRS agencies, including fire police, emergency management and public health
- Tactical Emergency Medical Services in law enforcement Special Weapons and Tactics (SWAT) teams
- California Fire and Rescue Mutual Aid Plan
- UASI projects, including HazMat typing, CBRNE projects, info sharing project, interoperable communication projects
- Fire agency automatic and mutual aid agreements in the region
- Multi-jurisdictional wastewater plants
- Local Government Oil Spill Contingency Plan
- Regional law enforcement task forces

Four respondents did not answer and one suggested we look at "Arizona's model."

There appears to be sufficient local example within the public safety community that can be reviewed by those members of MMRS, as well as a non-homeland security example (regional wastewater plants), which could demonstrate local approaches to collaborative issues. The identification of the state's mutual aid system may be of help in matching issues and choices to a long-standing model of planning and response effort.

E. CONCLUSION

Overall, the responses to both rounds of the Delphi survey reinforce the themes of collaboration found in the literature and the results from the survey of national MMRS staff. With regard to motivators to collaboration and benefits of collaboration, the most

frequent themes within the IOM model relate to process, such as joint training, developing common procedures and regional planning. Input related ideas, particularly funding, were less motivating to the respondents and were more often seen as potential barriers to collaborative effort. The output notions of better capabilities and better system performance that lead to better response outcomes were not lost on the participants but were not as highly rated as processes, which would be a means to improved outcomes.

The results within the Hocevar et al.'s (2006) ICC model appear to be spread across all five model domains. With regard to enablers to collaboration, the People domain theme of cooperation and communication was the highest rated factor, however, common goals, shared vision and flexibility represent the other themes that were present more often, and are found in the Purpose and Strategy, as well as Structure domains. When barriers or challenges to collaboration are presented, Purpose and Strategy as well as Structure themes are observed again, including goals and resources. People themes of skills and personalities appear at a lower rating as a challenge.

When asked to draw a conclusion on the agenda for collaboration, Purpose and Strategy themes were clearly the most prominent, while themes within Lateral Processes, Structuring and People were also identified. This is consistent with the other theories of collaboration as well, in that identifying purpose or goals, and attending to the formation of the group are critical early steps. The group remained consistent in its responses, in that identified barriers, enablers and motivators led logically to the ideas to move a collaborative effort forward. The next chapter will merge the results into the research questions and propose recommendations for the way ahead.

VI. FINDINGS AND RECOMMENDATIONS

Interagency collaboration, the joke goes, is an unnatural act committed by non-consenting adults. (Bardach 1998, p. 263)

A. INTRODUCTION

The San Francisco Bay Area (Bay Area) is a region of over seven million residents covered by four Metropolitan Medical Response System (MMRS) programs and one Urban Area Security Initiative (UASI) area. Its residents live in and around 103 cities spread through ten counties and a number of special government districts (ABAG, 2010). The MMRS mission is to plan for and respond to multi-casualties or public health concerns. Currently the four Bay Area MMRSs operate independently, which leads to preparedness and response gaps and overlaps within the region.

This thesis addresses the research question: “How can MMRS agencies in a region collaborate to address mission gaps and overlaps?” Secondary questions include:

- What would be the benefits of effective collaboration among MMRSs and UASI in this region?
- How would collaboration increase or decrease operational (emergency response) capacity?
- How would collaboration address gaps and overlaps in planning?
- What would successful collaboration look like?
- How can the gap between the current state and the ideal state be narrowed or filled?
- How can alignment between MMRS and UASI be created?
- What are the enabling factors for improving collaboration in the San Francisco Bay Area?
- What are the barriers to collaboration in the San Francisco Bay Area?

This chapter presents findings to the research questions by discussing the survey results, the background and context of the problem and the literature on collaboration. This study began by reviewing the background of the MMRS and UASI programs and the literature on collaboration, which later informed the process of data analysis. The author took advantage of an opportunity while speaking at a national MMRS and UASI conference by disseminating a brief open-ended survey, which provided data from 58 MMRS representatives on their perspectives relating to the MMRS program and collaboration. Using survey results from the national conference, a two-round Delphi survey was created and distributed to 27 representatives of the four Bay Area MMRSs and the Bay Area UASI to gather local perspectives on the research questions. The first round of the Delphi survey concentrated on collaborative activities' benefits and motivators, as well as enablers and barriers to collaboration. The second round of the Delphi survey, informed by the results of the first, investigated more specific activities and the processes that might be undertaken. The Institute of Medicine's process model from *Tools for Evaluating the Metropolitan Medical Response System Program: Phase I Report* (2002) and Hocevar et al.'s (2006) interagency collaborative capacity model were used as frameworks to analyze responses. The models complemented each other in analyzing data.

The research question findings are presented below, followed by short- and long-term recommendations for action and directions for future research in the area of MMRS collaboration.

The major findings from this study were:

- There are benefits to collaboration between the San Francisco Bay Area MMRSs, other MMRSs and UASI. Those benefits address gaps and overlaps in the Bay Area and include *joint training, regional strategy and planning, standard operating procedure development* and *MMRS mutual aid*. Collaboration can address both planning and operational capacity.
- There are a number of process issues that will affect a collaborative effort. The most important issues are displayed in Table 20 but examples include *developing common goals, enabling flexibility, and addressing competitive barriers*.

- There are enablers and barriers to collaboration that were identified by Bay Area research participants. The primary enabler is *positive people behaviors*. The primary barriers are *defining roles* and *gaining agency support*. The barriers were not identified as insurmountable.

B. RESEARCH QUESTION FINDINGS

This section provides the findings for the study's nine research questions. The secondary questions are presented first, followed by findings to the overarching research question, "How can MMRS agencies in a region collaborate to address mission gaps and overlaps?"

1. What Would Be the Benefits of Effective Collaboration Among MMRSs and UASI in This Region?

The literature shows that perceived benefits motivate collaboration (Bardach, 1998; O'Leary & Bingham, 2009). These benefits can come in a variety of ways including resource sharing, mission achievement and access to surge capacity. The MMRS mission is to care for patients and victims of a manmade or natural disaster. This mission requires all of the benefits mentioned above. By design, MMRS is collaborative, acknowledging that many sectors, public and private, can and should contribute to achieving the MMRS mission. Likewise, UASI's mission is broad, involves many governments in the Bay Area and cannot be achieved without some form of collaboration. Collaboration has been made explicit in both programs, although the success of their efforts is not measurable at this time (GAO, 2009).

For this study both a national sample and Bay Area participants were asked to name the benefits of collaboration. Responses from the national sample were analyzed using the Institute of Medicine's input, process, output model (2002). Nearly three fifths of the national sample articulated benefits that could be categorized as input. Input benefits included finding economies of scale, avoiding duplication, leveraging strength, sharing best practices and obtaining additional funding. Forty-one percent of the national sample identified process-related benefits including strategic planning, increasing

preparedness, filling gaps, developing common goals, and enhancing operability. Twenty-one percent of the national respondents identified an outcome-related benefit: increasing capabilities.

When the benefits from the national sample were presented to the Bay Area group, the responses were similar. The Bay Area MMRS sample's highest-rated benefits (in order of importance) were: *providing joint training, establishing common standard operating procedures, developing a regional plan, receiving MMRS mutual aid and developing a unified regional strategy*. These benefits are smart practices that fulfill some of the input and process ideas of the IOM (2002) model. These ideas address both preparedness and response elements, and by setting regional priorities the Bay Area can avoid the inconsistent use of grant funds between programs observed by the Center for Homeland Defense and Security working group (CHDS, 2007, p. 3).

2. How Would Collaboration Increase or Decrease Operational (Emergency Response) Capacity?

The initial purpose of MMRS was to respond to the mass casualty consequences of a weapon of mass destruction incident. Despite subsequent broadening of the MMRS mission, the initial purpose remains a critical component of the program. The IOM evaluation demonstrated that preparedness to deploy operational capacity must be "... a continual process, rather than a one-time event ..." (IOM, 2003, p.1), and Cooksey observed fractures in the nation's response system (2004). Clearly, there is a need for operational capacity, and no one agency can meet the MMRS mission singlehandedly.

Ideas that surfaced in the national survey included reducing operational overlaps in equipment, acquiring mutual aid to increase response capacity and creating an efficient team for complex events. The ideas of joint training and common standard operating procedures emerged as top priorities in the Bay Area sample and are practices that contribute to operational capacity. Specific ideas also included developing common standards and equipment inventories that build efficiency and effectiveness, and a mutual aid plan that could lead to increased resources mitigating an incident, which, in turn, could lead to better citizen outcomes. Bay Area experts believe that *joint training, a*

unified strategy, common standard operating procedures and *mutual aid* are the most achievable of these ideas, and they saw *joint operations* as a successful outcome of a collaborative effort.

Interestingly, providing mutual aid was rated lower than obtaining mutual aid in the Bay Area. This could suggest a stronger predisposition to receive than to give in a collaborative relationship; this could merit further examination. However, all of the agencies should be aware that in California mutual aid is reciprocal. The sentiment expressed by respondents was that mutual aid be conducted within a plan, usually mentioned as the existing State Mutual Aid plan.

3. How Would Collaboration Address Gaps and Overlaps in Planning?

The network nature of MMRS, a program designed with a number of disciplines involved, requires planning to integrate the efforts of the system components to meet its mission. The Bay Area adds a layer of complexity in terms of both the number of MMRS resources available and the number of jurisdictions that comprise the region. The evolution of local and state plans independent of the MMRS program suggests that integration is a necessary, or at least a beneficial step toward more effective response. Santa Clara County's attempt to regionalize medical emergency planning (CMRS, 2002) is an example to be emulated in the entire region.

The national survey results indicated planning as both a benefit of collaboration and a process to mitigate gaps and overlaps across regions, disciplines and sectors. Respondents also saw a plan as an output of successful collaboration. The Bay Area respondents identified *regional planning* as a top motivator to collaborate in that it would reduce overlaps. The Bay Area group also identified *developing a unified regional strategy* as a top achievement that could be realized through collaboration.

4. What Would Successful Collaboration Look Like?

The literature revealed no uniform appearance for success in collaboration (Bardach, 1998; Huxham & Vangen, 2005). As observed in the literature "Wicked problems have no given alternative solutions" (Conklin, 2006, p.8). There appear to be as

many solution options as problems. The participants define success, ideally by achieving their respective as well as joint goals, but perhaps also by obtaining other collaborative benefits, such as positive relationships, or incremental improvements, such as gaining input or process benefits.

When asked what a successful collaboration would look like, the national sample pointed to processes that enhanced outcomes. Consensus building was mentioned frequently, as well as planning and interaction leading to results. The outputs of successful collaboration were characterized as “joint operations.” The respondents seemed to understand what is required to achieve joint operations, and joint operations ideally lead to the outcome of improved patient care, which is in line with purpose of both MMRS and UASI.

The Bay Area group was asked to identify models of successful collaboration in their region. They provided a list of mostly public safety examples, including fire and rescue mutual aid plans and regional law enforcement task forces, which is not surprising given the public safety majority in the MMRS programs. The 50-year history of California’s mutual aid system and the planning inherent in the system has instilled an awareness of cooperative effort, if not collaborative effort in most public safety managers. The Bay Area group also mentioned a non-homeland security example: multi-jurisdictional wastewater plants. This indicates an awareness that agencies currently collaborate on other endeavors. Both homeland security and non-homeland security collaboration examples provide ongoing models.

5. How Can the Gap Between the Current State and the Ideal State Be Narrowed or Filled?

The ideal state is implied in grant guidance for MMRS as “Emergency Triage and Pre-hospital Treatment” (DHS, 2008, p. 6) and for UASI as “Developing and Enhancing Health and Medical Readiness and Preparedness Capabilities” (DHS, 2008b); however, these guidelines are far from specific. The IOM (2002) infers that the ideal is “... improved responses not only to a wide spectrum of terrorist acts, but also to mass-

casualty incidents of all varieties” (p. 170). Given the latitude available, respondents were honest about existing gaps and overlaps. The current state is less than the ideal, at least in the minds of respondents.

The benefits and ideas that surfaced have been mentioned in previous sections of this chapter. All of the tangible efforts to achieve those benefits will contribute to narrowing the gap between ideal and current. Specifically, Bay Area respondents believed that they could *conduct joint training, develop a unified regional strategy and develop common SOPs*.

6. How Can Alignment Between MMRS and UASI Be Created?

The respective grant documents of MMRS and UASI promote or require collaboration between disciplines and jurisdictions. For example, MMRS grant guidance (DHS, 2008, p. 5) states:

MMRS Steering Committees are encouraged to discuss their existing MMRS operational area, and work with neighboring communities and their State to:

- Develop and update mutual aid agreements based on existing capabilities, including personnel and equipment
- Develop integrated, collaborative strategies for expanding the MMRS operational area as needed.

UASI has an objective of expanding regional collaboration, which is also an overarching priority of the National Preparedness Goals (Bay Area SUASI, 2009).

The Bay Area UASI has already contracted one study that indirectly addresses this research question. The *CBRNE Capability Assessment and Strategic Plan* (2008) presents several findings mentioned in the literature review that can be used to align the objectives of Bay Area MMRSs and UASI, such as, “develop a Bay Area MMRS operations plan,” and “support MMTF (sic) efforts by actively promoting regular planning, recruitment, training and response participation by all members” (Bay Area SUASI, 2008, p. 12-5). This example aligns with the Bay Area respondent group’s belief that they could *conduct joint training, develop a unified regional strategy and develop*

common SOPs. The Bay Area MMRSs and UASI can selectively pursue activities under each program that contribute to the other program's success as well. These activities can be achieved without incurring additional costs or co-mingling individual grants, thus avoiding one of the potential deterrents to collaboration.

7. What Are the Enabling Factors for Improving Collaboration in the San Francisco Bay Area?

Enablers of successful collaboration found by Hocevar et al. (2006) include a “felt need” to collaborate, common goal or recognized interdependence, social capital, effective communication, leadership support and commitment, incentives and individual collaborative skills (p. 8). Gray (1985), Bardach (1998), and Huxham and Vangen (2001) described similar themes, such as trust, that enable collaboration to succeed.

The national survey affirms the literature, with the majority (51 percent) speaking to felt need and then emphasizing mission and “buy-in,” all of which were captured in the Hocevar et al.'s (2006) interagency collaborative capacity (ICC) model within the Purpose and Strategy domain. Themes in the People domain followed closely (48 percent), emphasizing relationships and individual skills or behaviors that help relationships develop positively. Themes from the remaining three domains in the ICC model, Lateral Processes, Incentives and Structure, were found in the national responses at a lower but notable frequency.

The San Francisco Bay Area responses were somewhat different than the responses from the national sample. For example, the Bay Area group mentioned elements within the Structure domain more frequently (58 percent) as enablers of collaboration, including *defining roles in advance* and *flexibility*. Elements within the Purpose and Strategy domain were mentioned a distant second (15 percent). An example of an enabler in this category is establishing *clarity of purpose in collaboration*. Themes within the domains of Incentives and People were least frequent, but included enablers such as *commitment from organizational leadership* and *communication* respectively. In the second round of the Delphi survey, Bay Area participants were asked to specify which enablers were most present in MMRS and UASI. Highest-rated responses related

to the People domain, followed more or less equally by Structure and Purpose and Strategy domains. So while common purpose and structure are important enablers, positive individual behaviors and structural characteristics will likely exert important positive influence in a collaborative effort in the San Francisco Bay Area.

The difference between the national and Bay Area responses may be due to local history. Within many of the agencies of the Bay Area there may already be a felt need, or at least a recognized interdependence. Such interdependence is already incorporated in the mutual aid plans for the region, which have been activated in catastrophic events such as the Bay Area Loma Prieta earthquake of 1989 and the Tunnel Fire in Oakland in 1991, as well as each year for various fire, law and emergency management purposes of smaller but significant magnitude. With Purpose and Strategy concerns addressed, it is logical that the enablers in the Bay Area emphasize Structure domain activities needed to make a collaboration work, as well as emphasize the characteristics of the individuals involved.

8. What Are the Barriers to Collaboration in the San Francisco Bay Area?

In Hocevar et al.'s study (2006) of DHS employees, the barriers to collaboration in a homeland security effort seen by at least 25 percent of study participants included competition, territoriality, inadequate communication and lack of familiarity (p. 8). Hocevar et al. also observed that "missing enablers" were present, such as lack of awareness of other agencies (p. 11). The national survey of MMRS done as part of this thesis revealed similar attitudes. Turf, competition and protectionism were the second most often reported barrier from this group, behind people behaviors such as personal turf, ego and lack of trust. Bardach (1998) also mentions these barriers to collaboration. Despite the fact that MMRS is inherently collaborative, the national survey group views gaining capacity by creating regional approaches as negatively affected by silo behavior. This perspective is not surprising, given the relatively small amount of grant money and the large amount of program deliverables, which can result in a MMRS agency working busily to meet its mission, husbanding its precious resources and not looking around for collaborative partners.

The Bay Area sample responded somewhat differently. The results seen in the national level results were less frequent or of lower priority in the Bay Area group. The results of the Delphi survey indicate that the barriers to collaboration in the San Francisco Bay Area include structuring activities such as *role definition* and *gaining agency support*. The second most common responses were in the domain of Purpose and Strategy and imply that attention must be paid to goal setting and aligning divergent priorities. In both surveys, people were seen as both enablers and barriers. Nationally, People themes arose slightly more frequently as barriers, and in the Bay Area, People factors were seen slightly more frequently as enablers. The Bay Area group is closer, geographically and professionally, which may result in existing relationships that influence respondents' views on the other potential players. The Bay Area group felt that regular meetings, executive buy-in, planning together, strong people skills and leadership as well as joint training and exercises could overcome barriers.

The costs of a collaborative effort were also examined as possible barriers. The initial ideas presented in round one responses and then ranked in a subsequent round revealed the sentiment that while getting things done may become more complex, or cost staff time, these costs were offset by benefits and therefore worth the effort. Challenges were not seen as insurmountable by most. The *loss of local perspective or ability to manage for local needs* was the highest ranked activity that could deter collaborative effort. The implication in this finding is that while attempting a regional collaborative approach, local needs must remain in the solution.

Some minority comments concerning fear of grant competition or loss of funds, which was seen more frequently in the national survey, reinforces the above implication. An Arizona MMRS professional observed, "Stakeholders come to the table because of money" (T. Shannon personal communication, March 22, 2010). Bay area professionals do not seem to come to the table because of money but may push away because of money. The fear of competition for funding is interesting, as MMRS is and has been a flat award, distributed equally to all MMRS programs. The idea of a risk-based allocation has been raised recently, however, and perhaps experiences in other grant programs influence this perspective (Heath, 2009).

The difference between the national and local perspectives on barriers to collaboration might be explained by two factors: 1) the somewhat homogenous administrative structure of the MMRSs in the Bay Area and 2) the existence of relationships that pre-date or parallel MMRS and UASI endeavors. All four of the Bay Area MMRS grant programs are administered by the respective city fire departments. Nationally, the percentage of MMRS programs led by emergency management departments is 46.3 percent, fire departments lead 30.6 percent, while Health or EMS agencies lead 13.9 percent (Heath, 2009). This implies a common discipline among Bay Area program leaders. Fire departments have clearly defined jurisdictions, and clearly defined zones and hierarchies of mutual aid response that may negate turf concerns. Fire department administrators may also have pre-existing successful relationships via the same mutual aid structure that may explain the lower concern for people issues. Fire departments have relied less on competitive grant funding for resources, while the other disciplines within MMRS have had more experience with competition and viewed it as more of a deterrent to collaboration.

9. How Can Metropolitan Medical Response System (MMRS) Agencies in a Region Collaborate to Address Mission Gaps and Overlaps?

This question is the primary, overarching research question for this thesis. The response to this question is answered in terms of both activities and processes. An activity refers to the choices of joint effort made by the collaborative partners, while processes refer to the organizational and individual actions, perspectives, and/or structural components that help or hinder the collaborative effort.

a. Activities

The literature provided a number of examples of activities that answer, “How can we collaborate?” Underlying the examples is the notion that a benefit must be achieved that makes the collaborative effort worthwhile. The homeland security problem space is vast, encompassing traditional all-hazards emergency preparedness and adding the dimension of terrorism, its prevention, and responses to terrorism, therefore, benefits could manifest in a variety of ways.

Benefits seen from the national respondents included predominately inputs and other activities: economies of scale, sharing best practices, filling gaps and strategic planning. A clear majority was looking to increase preparedness, recognizing that the types of incidents for which MMRS was created “don’t follow strict jurisdictional boundaries,” as one respondent observed. The Bay Area group sees collaboration as including activities like *joint training*, *common goal setting*, *developing standard operating procedures*, *regional planning* and *performing a gap analysis*. These benefits reflect the operational priorities of the public safety leaders of the MMRS program in the Bay Area; *joint training* and *standard operating procedure development* were at the top of the list, followed by *development of a regional MMRS plan*. Many of the input themes identified at the national conference were also reflected in the comments from the local level respondents. The ability to have surge capacity for disaster response is a local desire in the homeland security endeavor, as are more basic functions such as training, planning and adopting resource-sharing opportunities.

b. Processes

In terms of processes “how can we collaborate?”, the way ahead was clearly suggested by the Bay Area survey results. The theories of collaboration all speak to dynamic processes with a number of thematic areas that must be considered and then addressed depending on the situation of the specific collaborative effort. Gray’s (1985) and Bardach’s (1998) processes, and Huxham and Vangen’s (2005) themes, all speak to areas of attention in any effort to increase collaboration across MMRSs and UASI in the Bay Area. Not all collaborative efforts require the same attention to the same themes and which area will matter first or matter most will emerge once the players are gathered; Huxham and Vangen note:

In generic terms, the broad purposes of collaboration may be concerned, at one extreme, at the strategic level with the advancement of a shared vision, or, at the other extreme, with delivery of a short-term project. They may require, at one extreme, considerable joint investment in action or, at the other, merely the development of a relationship and some exchange of information. For some collaborations issues of participation—either community participation in a public partnership or worker participation

through industrial democracy—and empowerment are central considerations. At the other extreme, in many collaborations these issues do not feature at all. (2005)

An MMRS program is a network; each MMRS program consists of several organizations. Collaboration among four MMRSs in the Bay Area implies a network of networks, and the systems in which all the players operate includes yet more entities, creating, in effect, an emergency preparedness domain. The implication for the MMRS effort is that the processes Gray (1985) describes in pre-emergency collaboration building may be more demanding and may offer better quality results than collaboration developed during an emergency. In advance of a crisis, much more time might be spent identifying conditions such as roles, problems, stakeholders and purpose to encourage a successful collaboration. The time spent on collaboration is “fraught with difficulties” according to Eden and Huxham (2001), and there is negotiation about all aspects of the effort. Individual behaviors play a role as well, and those behaviors can contribute to success or act as a barrier.

What would the Bay Area processes look like? One respondent observed, “I think the first step would be to see increased collaboration between the Bay Area MMRSs. Perhaps meet quarterly and have meaningful dialogue that could lead to collaboration and understanding.” At its simplest, the collaboration processes will begin by getting appropriate organizational representatives in the same room. Table 21 uses Hocevar et al.’s (2006) ICC model as a framework to summarize the survey data and outline a Bay Area collaborative methodology. Those agencies establishing or expanding collaboration processes among MMRS and UASI participants would want to examine these factors.

With regard to Purpose and Strategy, the Bay Area collaboration should capitalize on felt need and a successful effort must leverage that felt need while meeting the expectations of the group. The collaborative effort should *develop a common goal and vision*, while *avoiding the loss of attention to local needs and efforts*, which was identified as a potential deterrent to collaboration.

Top-down approaches and burdensome governance structures would seem, in the Bay Area, to be disincentives for participation in collaboration. In the Structure domain of the Hocevar et al. (2006) model, then, *enabling flexibility, defining roles, candidly working through priorities, acquiring executive support and maintaining momentum* while *avoiding complex governance* are critical. *Seeking positive outcomes* and *addressing competitive behaviors* emerged as Incentives domain areas to attend. *Building on successes* and *encouraging positive communication behaviors* are recommended as important Bay Area process themes in the model's Lateral Processes and People domains respectively (Table 21).

Table 21. Critical Bay Area MMRS-UASI Collaborative Processes (After Hocevar et al., 2006)

ICC Domain	Critical Bay Area Themes from Survey Data
Purpose and Strategy	<i>Build awareness of need/benefits</i> <i>Development of common goals</i> <i>Development of shared vision</i> <i>Avoid losing local and agency perspective*</i>
Structure	<i>Enable flexibility</i> <i>Avoid complex governance*</i> <i>Maintain momentum</i> <i>Acquire explicit executive support</i> <i>Define roles</i> <i>Candidly work through priorities</i>
Incentives	<i>Address competitive behaviors; seek positive outcome</i>
Lateral Processes	<i>Build on successes</i>
People	<i>Encourage positive communication behaviors</i>

* Potential deterrents

None of the models identified in the literature put forth a prescribed set of priorities in establishing and improving collaboration. This reinforces the notion that Bay Area MMRS-UASI collaboration will be regionally specific and must be viewed as a number of activities with an uncertain degree of importance and urgency to each. Any collaborative effort will need to be mindful of the deterrents noted by the Bay Area

group, which are noted in Table 21 (see items with an asterisk). Recognizing that the majority did not deem the challenges insurmountable does not mean that deterrents can be ignored.

C. ITEMS FOR ACTION/IMPLEMENTATION AND CHALLENGES

1. Short-Term Actions

The theories and themes of collaboration illustrate a dynamic process that truly begins when the participants come together to explore opportunities. One possible way to begin this process is to present the findings of this thesis to the subject matter experts and their agencies who contributed to the study. Augmenting a presentation with a discussion of collaboration theories and themes can frame initial approaches, and the group can quickly move to easy, initial action steps based on the thesis findings.

Specifically:

- Call a meeting of leadership of the four Bay Area MMRSs and the Bay Area UASI
- Present the findings of this study as an opener for reactions and a discussion on possible action items
- Look for quickly achievable goals based on upon the data presented in this study and
- Build upon successes
- Adopt or create a regional MMRS and UASI collaborative methodology
- Be mindful of the critical factors and potential deterrents noted in Table 21
- Foster positive relationships between individuals, agencies and programs

2. Long-Term Actions

In the long term, regional efforts that create and maintain a foundation of knowledge, skills and abilities regarding collaboration will be necessary. More complex or longer-term activities within the MMRS and UASI missions may follow initial successes. To those ends:

- Prepare groups and individuals for perpetual participation.
- Identify organization-level collaboration goals.
- Give participants tools to help them succeed and rewards when successes are accomplished.
- Continue to foster relationships as part of succession planning within the collaborative effort and encourage participating agencies to do the same.
- Consider collaborative capacity as an important dimension of agency leadership responsibility.
- Engage the UASI for *CBRNE Capability Assessment and Strategic Plan* gap analysis update. Resource the *CBRNE* plan's findings and act on them.
- Refine the Bay Area mutual aid plan for health responses in both immediate need (e.g., CBRNE) and planned need (e.g., H1N1 vaccination).
- Consider how the other sectors fit. Strive for regional consistency, not just county consistency.

Given the dynamics of this process, as demonstrated in the literature review and the subsequent surveys, attention to the leadership function is important. The leadership of each program, and perhaps the group as a whole, ought to be educated on the notion of meta-leadership (Dorn et al., 2005) or the characteristics of leaders of a mega-community (Gerenscer et al., 2008). Meta-leaders, working across a variety of disciplines, bring curiosity, imagination, persuasion, conflict management skills and organizational sensibilities to the collaborative effort (Dorn et al., 2005). Leaders could use the Hocevar

et al. (2006) model, or the other models of collaboration presented in the literature, to systematically identify the organizational factors that need attention in building collaborative capacity.

Broader recommendations for improving MMRS and UASI regional collaboration:

- **Local**—Train and educate managers in collaboration. Contribute towards regional solutions to best of your ability.
- **Regional**—Use regional resources for planning and boilerplate development. Facilitate development of common operational frameworks and equipment inventories.
- **State**—Develop a state MMRS plan and typing according to the CBRNE Capability Assessment and MMRS Coalition efforts. Focus on language (common terminology) and preparedness.
- **Federal**—Invest in baseline capabilities. Simplify grant deliverables to realistically achievable items. Provide education in collaboration to public and private sectors. Continue work to refine metrics for collaborative capacity and collaborative efforts. Boilerplate planning tools.

D. SUGGESTIONS FOR FUTURE RESEARCH

Future research efforts can study how to refine a methodology to achieve collaboration among disciplines and agencies, how to increase collaborative capacity in individuals and organizations, how to train or educate participants towards collaboration as a tool to solve problems, as well suggestions for moving theory to practice. Future research can also consider the applicability of these concepts to regionalization of a variety of preparedness efforts, such as evacuation plans, care and shelter plans or volunteer management.

In a number of responses, particularly concerning barriers, the author wished to probe the underlying reason or psychology for the barriers. Were the barriers real or perceived? Were they based on experience, an organizational mythology or oral tradition?

Finally, there are clearly gaps and overlaps in the system of grants that influence the MMRS agencies. Are the homeland security grant programs aligned, efficient and productive?

E. CONCLUSION

No one sector or agency is equipped to solve the entire mass casualty response problem, if the goal is rapid and effective patient care from the incident scene to definitive care in a hospital. A response to large-scale mass casualty events is complicated. In the San Francisco Bay Area with seven million citizens, 103 cities, 10 counties, a response is more complicated. As time increases from the last CBRNE incident, the drive to address gaps and overlaps diminishes.

There remains a troublesome possibility that during a mass casualty incident in practice - emergency responders once again will clash, the public will be given conflicting information, and lives will be unnecessarily lost simply because agency leaders now, in the pre-event preparatory period, did not come to terms with the critical need to achieve a versatile capacity for connectivity.... (Dorn et al., 2005, p. 43)

MMRS and UASI are both complex adaptive systems. We must acknowledge and use that fact in preparing for response. MMRS, like mutual aid, is a bottom up system, designed with collaboration as a cornerstone. None of the recommendations requires permission; they do require action.

APPENDIX A. NATIONAL MMRS SURVEY

NATIONAL MMRS CONFERENCE

Collaboration and Communication in MMRS

Please take a few moments and answer these questions in just a few words. The survey will be collected after the presentation.

1. How do you rate your MMRS' collaboration with other programs (e.g., another MMRS, a county or state program, or a UASI)?
 - a. Low
 - b. Medium
 - c. High
2. Why should MMRS programs collaborate?
3. What would be the benefits of MMRS programs collaborating with each other, with UASIs, or with other programs?
4. What behaviors or abilities enhance success in collaboration?
5. What behaviors or abilities are barriers to collaboration?
6. When it is at its best, what would successful collaboration look like?

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B. DRAFT CONTACT E-MAIL FOR SUBJECTS

To: xxx, San Francisco/Oakland/San Jose/ Metropolitan Medical Response
System Steering Committee
UASI Steering Committee

From: Bruce Martin, Fire Chief, Fremont Fire Department
Fremont Metropolitan Medical Response System

Date: August 1, 2009

Subject: Survey Request

I am in a Homeland Security Master's program at the Naval Postgraduate School in Monterey. I am writing to request your participation in a Delphi survey that I am conducting for my thesis.

The thesis is on the subject of "Collaboration in the Metropolitan Medical Response System." I will be looking at the benefits of collaboration among the San Francisco Bay Area MMRSs and UASI, as well as potential success factors and barriers.

The survey will consist of three rounds, with about six questions per round. The survey will be conducted using an online survey tool, and only I will have access to the raw data.

Will you be willing to participate? Please let me know. If you have questions that I have not answered, please call or e-mail.

Thank you in advance.

Bruce Martin
Fire Chief
Fremont Fire Department
3300 Capitol Avenue, Building A
Fremont, CA 94537
O: 510-494-4202

bmartin@ci.fremont.ca.us

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C. INTRODUCTION EMAIL ROUND 1

1. Intro E-Mail

To: San Francisco/Oakland/San Jose/ Metropolitan Medical Response System Steering Committee Members
UASI Working Group Members

From: Bruce Martin, Fire Chief, Fremont Fire Department
Fremont Metropolitan Medical Response System

Date: December 22, 2009

Subject: MMRS Collaboration Survey Request

I am in a Homeland Security Master's program at the Naval Postgraduate School in Monterey. I am writing to request your participation in a Delphi survey that I am conducting for my thesis. I will be looking at the benefits of collaboration among the San Francisco Bay Area MMRSs and UASI, as well as potential success factors and barriers.

The survey will consist of two rounds, and will take about 30 minutes of your time for each round. The survey will be conducted using an online survey tool. Only I will have access to your raw data. Individual results will be aggregated and reported in a way that will allow your individual responses to remain confidential and anonymous.

I hope you are willing to participate. If so, please continue with the survey below. The first page is required by the Naval Postgraduate School's review board for all research. It describes your protections in participating in the study. I would appreciate it if you could complete this survey within the next two weeks.

If you have questions that I have not answered, please call or e-mail.

Thank you in advance.

Bruce Martin
Fire Chief
Fremont Fire Department
3300 Capitol Avenue, Building A
Fremont, CA 94537
O: 510-494-4202
bmartin@ci.fremont.ca.us

2. Informed Consent Form

Introduction. You are invited to participate in a research study entitled "Collaboration in the Metropolitan Medical Response System."

Procedures. The thesis question is "How can Metropolitan Medical Response System (MMRS) agencies in a region collaborate to better meet the MMRS mission?"

The respondents will consist of approximately 50 homeland security professionals from MMRS agencies in the San Francisco Bay Area. The thesis will use a Delphi survey of two rounds; each round will take about 30 minutes to complete. Individual responses will be aggregated so that all individual input is anonymous.

Risks. The potential risks of participating in this study are no greater than those encountered in everyday life.

Benefits. Anticipated benefits from this study are a better understanding of collaboration in a regional homeland security environment and better mission achievement because of that understanding.

Compensation. No tangible compensation will be given. A copy of the completed thesis will be available through the Homeland Security Digital Library, or from the author.

Confidentiality & Privacy Act. Any personal information that is obtained during this study will be kept confidential to the full extent permitted by law. Records will be maintained solely by the researcher at his office. No one else will have access to them. In the presentation of research findings, respondents will not be identified in any way so as to violate anonymity or confidentiality. However, it is possible that the researcher may be required to divulge information obtained in the course of this research to the subject's chain of command or other legal body.

Voluntary Nature of the Study. Participation in this study is strictly voluntary, and if agreement to participation is given, it can be withdrawn at any time without prejudice.

Points of Contact. If there are any questions or comments regarding this project, or if a research related injury is received, the Researcher, Bruce Martin, (510) 750-3800, bkmartin@nps.edu, should be contacted. Any other questions or concerns may be addressed to the Principal Investigator, Dr. Ted. G. Lewis, (831) 656-2830, tlewis@nps.edu, or the Naval Postgraduate School IRB Chair, Dr. Angela O'Dea, 831-656 3966, alodea@nps.edu.

Statement of Consent. I have read the information provided above. I have been given the opportunity to ask questions and all the questions have been answered to my satisfaction. By continuing with the survey, I am agreeing to participate in this study. I understand that by agreeing to participate in this research, I do not waive any of my legal rights.

*** 1. I agree to participate in this study. I understand that by agreeing to participate and clicking "yes," I do not waive any of my legal rights.**

☐ Yes

☐ No

3.

Recently, a national sample of MMRS officials was asked, "Why should MMRSs collaborate with each other, or with UASI?" The following questions are based on their responses. Please take a few minutes to indicate the importance of each issue and provide a brief comment.

How important would each of these achievements be in motivating your organization to engage in collaboration with other SF Bay Area MMRSs and/or the SF Bay Area UASI?

2. -

	Not Important					Extremely Important
Reducing program overlaps (e.g. redundant plans)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please explain or give specific example of potential benefit.

3. -

	Not important					Extremely important
Filling gaps (e.g. deliverables not met)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please explain or give specific example of potential benefit.

4. -

	Not Important					Extremely Important
Developing a regional MMRS plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please explain or give specific examples of potential benefit

5. -

	Not Important					Extremely Important
Merging funding streams from several sources to meet deliverables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please explain or give specific example of potential benefit

6. -

Not important

Extremely
important

Gaining economy of
scale (e.g. purchasing
supplies, staffing)

☐☐☐☐☐☐

Please explain or give specific examples of potential benefit

7. -

Not important

Extremely
important

Receiving MMRS
mutual aid

☐☐☐☐☐☐

Please explain or give specific example of potential benefit

8. -

Not important

Extremely
important

Providing MMRS mutual
aid to uncovered
neighbors

☐☐☐☐☐☐

Please explain or give example of specific benefit

9. -

Not important

Extremely
important

Developing a unified
perspective on MMRS
mission in SF Bay Area

☐☐☐☐☐☐

Please explain or give specific example of potential benefit.

10. -

Not important

Extremely
important

Developing a unified
regional strategy

☐☐☐☐☐☐

Please explain or give specific example of potential benefit

11. -

Not important

Extremely
important

Developing common
standard operating
procedures

☐☐☐☐☐☐

Please explain or give specific example of potential benefit

12. -

Not important

Extremely
important

Conducting joint
training

☐☐☐☐☐☐

Please explain or give specific example of potential benefit

13. -

Not important

Extremely
important

Increasing MMRS
capabilities

☐☐☐☐☐☐

Please explain or give specific example of potential benefit

4.

14. Ability to achieve results - To what extent could your agency achieve each of the following results from collaboration with other SF Bay Area MMRSs and/or the SF Bay Area UASI?

	No achievement - 1	2	3	4	5	Full achievement - 6
a. Reduce fully accomplished program overlaps (e.g. redundant plans)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Fill gaps (e.g. deliverables not met)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Develop a regional MMRS plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Merge funding streams from several sources to meet deliverables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Gain economy of scale (e.g. purchasing supplies, staffing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Receive MMRS mutual aid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Provide MMRS mutual aid to uncovered neighbors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Develop a unified perspective on MMRS mission in SF Bay Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Develop a unified regional strategy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Develop common Standard operating procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Conduct joint training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l. Increase MMRS capabilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. If you rated any of the above at the 1 to 3 scale, please explain why you do not believe that collaboration will help your agency's ability to achieve results.

5.

16. What other benefits are to be gained from a SF Bay Area MMRS/UASI collaboration?

17. What might be the downsides or costs of SF Bay Area MMRS/UASI collaboration?

6.

18. What would be the major challenges of starting a SF Bay Area MMRS/UASI collaboration?

19. What would enhance the success of a SF Bay Area MMRS/UASI collaboration?

7. Demographics

These answers will not be explicit in the final thesis; they are for the use of the researcher only.

* 20. Affiliation

- ☐ MMRS
- ☐ UASI
- ☐ Both

* 21. Discipline

- ☐ Law
- ☐ Fire
- ☐ EMS
- ☐ Public Health
- ☐ Emergency Management
- ☐ Mental Health
- ☐ Volunteer
- ☐ Private
- ☐ Other

Other (please specify)

8. Thank You

Thank you for your help. You will receive a final round of questions in several weeks.

Bruce Martin

APPENDIX D. INTRODUCTION EMAIL ROUND 2

Collaboration in the SF Bay Area MMRS and UASI - Round Two

1. Intro E-Mail

To: San Francisco/Oakland/San Jose/ Metropolitan Medical Response System Steering Committee Members
UASI Working Group Members

From: Bruce Martin, Fire Chief, Fremont Fire Department
Fremont Metropolitan Medical Response System

Date: March 8, 2010

Subject: Round Two MMRS and UASI Collaboration Survey Request

I am writing to ask you to complete Round Two of my thesis research on the benefits and challenges of collaboration among SF Bay Area MMRSs and UASI. I am interested in input from all of you, regardless of whether you participated in Round One. Your perspectives are important. This is not a typical "statistical" survey. Your knowledge is critical to identifying answers in our region.

The survey will take about 20 minutes of your time. Only I will have access to your raw data. Individual results will be aggregated and reported in a way that will allow your individual responses to remain confidential and anonymous.

I hope you are willing to participate. If so, please continue with the on-line survey below. The first page is required by the Naval Postgraduate School's review board for all research. It describes your protections in participating in the study. I would appreciate it if you could complete this survey within the next week. I will close it on March 19, 2010.

If you have questions that I have not answered, please call or e-mail.

Thank you in advance.

Bruce Martin
Fire Chief
Fremont Fire Department
3300 Capitol Avenue, Building A
Fremont, CA 94537
O: 510-494-4202
bmartin@ci.fremont.ca.us

Collaboration in the SF Bay Area MMRS and UASI - Round Two

2. Informed Consent Form

Introduction. You are invited to participate in a research study entitled "Collaboration in the Metropolitan Medical Response System."

Procedures. The thesis question is "How can Metropolitan Medical Response System (MMRS) agencies in a region collaborate to better meet the MMRS mission?"

The invited participants will consist of approximately 50 homeland security professionals from MMRS agencies in the San Francisco Bay Area. The thesis uses a Delphi survey of two rounds; each round takes about 20 minutes to complete. Individual responses will be aggregated so that all individual input is anonymous.

Risks. The potential risks of participating in this study are no greater than those encountered in everyday life.

Benefits. Anticipated benefits from this study are a better understanding of collaboration in a regional homeland security environment and better mission achievement because of that understanding.

Compensation. No tangible compensation will be given. A copy of the completed thesis will be available through the Homeland Security Digital Library, or from the author.

Confidentiality & Privacy Act. Any personal information that is obtained during this study will be kept confidential to the full extent permitted by law. Records will be maintained solely by the researcher at his office. No one else will have access to them. In the presentation of research findings, respondents will not be identified in any way so as to violate anonymity or confidentiality. However, it is possible that the researcher may be required to divulge information obtained in the course of this research to the subject's chain of command or other legal body.

Voluntary Nature of the Study. Participation in this study is strictly voluntary, and if agreement to participation is given, it can be withdrawn at any time without prejudice.

Points of Contact. If there are any questions or comments regarding this project, or if a research related injury is received, the Researcher, Bruce Martin, (510) 750-3800, bkmartin@nps.edu, should be contacted. Any other questions or concerns may be addressed to the Principal Investigator, Dr. Ted. G. Lewis, (831) 656-2830, tlewis@nps.edu, or the Naval Postgraduate School IRB Chair, Dr. Angela O'Dea, 831-656 3966, alodea@nps.edu.

Statement of Consent. I have read the information provided above. I have been given the opportunity to ask questions and all the questions have been answered to my satisfaction. By continuing with the survey, I am agreeing to participate in this study. I understand that by agreeing to participate in this research, I do not waive any of my legal rights.

*** 1. I agree to participate in this study. I understand that by agreeing to participate and clicking "yes," I do not waive any of my legal rights.**

☐ Yes

☐ No

Collaboration in the SF Bay Area MMRS and UASI - Round Two

3.

In the first round of survey, you were asked to rate activities that would motivate you to engage in collaboration with other SF Bay Area MMRSs and/or the Bay Area UASI. Over 50% of you responded, and the information below displays the average ratings from your replies.

The results are listed in order of importance. The average of your ratings follows each in parentheses. The ratings are on a scale of 6 (extremely important) to 1 (not important). For example, "a. conducting joint training" was rated as the activity that could most motivate MMRS/UASI members to collaborate.

Again, I am Interested In Input from all of you, regardless of whether you participated in Round One of this Inquiry.

ACTIVITIES WHICH COULD MOTIVATE COLLABORATION

- a. Conducting joint training (5.5)
- b. Developing common standard operating procedures (5.3)
- c. Developing a regional MMRS plan. (5.3)
- d. Receiving MMRS mutual aid (5.3)
- e. Developing a unified regional strategy (5.3)
- f. Reducing program overlaps (e.g. redundant plans) (5.1)
- g. Filling gaps (e.g. deliverables not met) (4.9)
- h. Providing MMRS mutual aid to uncovered neighbors. (4.8)
- i. Developing a unified perspective on MMRS mission in SF Bay Area (4.7)
- j. Merging funding streams from several sources to meet deliverables (4.6)
- k. Gaining economy of scale (e.g. purchasing supplies, staffing) (4.2)
- l. Increasing MMRS capabilities (4.1)

2. Do any of these results surprise you? Please explain if yes.

3. What do the above results above imply about MMRS and/or UASI collaboration?

Collaboration in the SF Bay Area MMRS and UASI - Round Two

4. It would be difficult to attempt all of these outcomes. Which three would be your top priority?

	1st priority	2nd priority	3rd priority
a. Conducting joint training (5.5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Developing common standard operating procedures (5.3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Developing a regional MMRS plan. (5.3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Receiving MMRS mutual aid (5.3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Developing a unified regional strategy (5.3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Reducing program overlaps (e.g. redundant plans) (5.1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Filling gaps (e.g. deliverables not met) (4.9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Providing MMRS mutual aid to uncovered neighbors. (4.8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Developing a unified perspective on MMRS mission in SF Bay Area (4.7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Merging funding streams from several sources to meet deliverables (4.6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Gaining economy of scale (e.g. purchasing supplies, staffing) (4.2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l. Increasing MMRS capabilities (4.1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Collaboration in the SF Bay Area MMRS and UASI - Round Two

4.

5. The following themes were identified as DOWNSIDES or COSTS to Bay Area MMRS-UASI collaboration. Rate them in terms of impact to your agency's motivation to collaborate. If you feel there are no downsides or costs to Bay Area MMRS-UASI collaboration, please skip this question and go to the next.

	Not a deterrent					Extreme deterrent
Administrative complexity - getting things done might be slower	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Loss of local perspective or ability to manage for local needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Loss of staff time for other projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other downsides (please specify below)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other downsides (please specify below)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other downsides (please specify)

6. I feel there are no downsides or costs to Bay Area MMRS-UASI collaboration.

- ☐ Yes
- ☐ No (please make sure to answer the question above)

Collaboration in the SF Bay Area MMRS and UASI - Round Two

5.

7. The following CHALLENGES to Bay Area MMRS-UASI collaboration were generated from the first round. Rank them from 1 through 5 in order of negative impact to your agency's motivation to collaborate (1st = highest deterrent to collaboration, 5th = least deterrent to collaboration).

	1st - highest deterrent to collaboration	2nd	3rd	4th	5th - least deterrent to collaboration
Divergent goals, mission drift, diverse set of organizations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of time, need for leader support, maintaining momentum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Competition between groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personalities and skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other Challenges (please specify below)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. Other challenges to collaboration not listed above (please specify).

9. Are the above challenges insurmountable? Why or why not?

10. How can the above challenges be overcome?

Collaboration in the SF Bay Area MMRS and UASI - Round Two

6.

11. The following factors that can ENABLE successful Bay Area MMRS-UASI collaboration were generated from the first round. Rate the extent to which you think these success factors are present in the MMRS and UASI organizations in the Bay area.

	Not present					Fully present
Acknowledged common goals, shared vision	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Formal opportunities to set goals for collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High level commitment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flexibility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Support from administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication, cooperation, handle conflicts constructively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other enabling factors (please specify and rate 1 to 6)

Collaboration in the SF Bay Area MMRS and UASI - Round Two

7.

12. Given the data on benefits, challenges, and success factors, what would you identify as the appropriate agenda for collaboration between the MMRSs and UASI? In other words, what is the way ahead?

13. Are there models in our region of successful collaboration? Please name them.

Collaboration in the SF Bay Area MMRS and UASI - Round Two

8. Demographics

These answers will not be attached to specific responses; they may be used to describe the affiliation of the responding group.

* 14. Affiliation

- ☐ MMRS
- ☐ UASI
- ☐ Both

* 15. Discipline

- ☐ Law
- ☐ Fire
- ☐ EMS
- ☐ Public Health
- ☐ Emergency Management
- ☐ Mental Health
- ☐ Volunteer
- ☐ Private
- ☐ Other

Other (please specify)

9. Thank You

Thank you for your help. I will let you know when the thesis is published, and how you can obtain a copy if you like.

Bruce Martin

LIST OF REFERENCES

- 2009 National Urban Area Security Initiatives (UASI) Conference. Retrieved June 1, 2010, from http://urbanareas.org/con/index.php?option=com_content&view=article&id=132&Itemid=139
- Association of Bay Area Governments. (2010). *ABAG website*. Retrieved January 5, 2010, from <http://www.abag.ca.gov/bayarea/eqmaps/eqhazmat/summary.html#conclusions>
- Bardach, E. (1998). *Getting agencies to work together. The practice and theory of managerial craftsmanship*. Washington, DC: Brookings Institute Press.
- Bardach, E. (2001). Developmental dynamics: Interagency collaboration as an emergent phenomenon. *Journal of Public Administration Research and Theory*, 11(2), 149.
- Bay Area Super Urban Area Security Initiative (SUASI). Retrieved January 15, 2009 from <http://bayareasuasi.org> [site disabled].
- Bay Area Urban Area Security Initiative. (2008a, May). *Chemical, biological, radiological, nuclear and explosive capability assessment and strategic plan*. Retrieved February 5, 2009, from http://www.bayareauasi.org/groups/cbrne/Shared%20Documents/CBRNE_Assessment_and_Strategic_Plan_Final_May_30_2008.pdf
- Bay Area Urban Area Security Initiative.(2008b, May). *Training and exercise regional overviews. Gap analysis. Multi year training and exercise plan. Training options inventory*. Retrieved February 5, 2009, from http://www.bayareauasi.org/groups/training/Shared%20Documents/Law_Fire_EMS_TE_Gaps_Strategic_Plan_FINAL.pdf
- California Fire Chiefs' Association. (2008, December 15). *Cal chiefs*. Retrieved December 16, 2008, from <http://www.calchiefs.org/index.cfm?HeadNum=17&PageNum=378>
- Callahan, Richard. (2008). *California network practices for homeland security and emergency management*. Retrieved January 4, 2010, from http://www.usc.edu/schools/sppd/bedrosian/private/docs/ccg_papers/callahan.pdf
- Center for Homeland Defense and Security. (2007). *CHDS working group recommendations on the metropolitan medical response system*. Monterey, CA: author.

- Conklin, J. (2006). Wicked Problems & Social Complexity. In *Dialogue mapping: Building shared understanding of wicked problems* (pp. 7–8). Hoboken, NJ: John Wiley & Sons, Ltd.
- Cooksey, J. (Ed.). (2004). Terrorism preparedness: Federal medical response programs and the health workforce. In *Illinois regional health workforce center*. Chicago: University of Illinois at Chicago.
- Cuhls, K. (2003) *Delphi method*. Karlsruhe, Germany: Fraunhofer Institute for Systems and Innovation Research. Retrieved January 15, 2010, from www.unido.org/fileadmin/import/16959_DelphiMethod.pdf
- Dorn, B. & Henderson, J. & Marcus, L. (2005). Meta-leadership and national emergency preparedness: strategies to build government connectivity. In *Working Papers*. Cambridge, MA: Center for Public Leadership, Kennedy School of Government.
- Eden, C. & Huxham, C. (2001). The negotiation of purpose in multi-organizational collaborative groups. *Journal of Management Studies*, 38(3).
- Emergency Management. (2010). *Urban Areas Security Initiative (UASI) (California)*. Retrieved June 1, 2010, from http://www.emergencymgmt.com/grants/emergency-preparedness/Urban_Areas_Security_22126.html
- Fremont Fire Department. (2005). SOW #4, MMRS Expansion. In V. Valdes (Ed.), *MMRS SOPs* (MMRS 233–02–0038). Internal document.
- Gerencser, M. & Van Lee, R. & Napolitano, F. & Kelly, C. (2008). Megacommunities: How leaders of government, business and non-profits can tackle today's global challenges together. New York: Palgrave Macmillan.
- Governor's Office of Emergency Services. (2007). *San Francisco Bay Area regional emergency coordination plan* (Base Plan). San Francisco, CA: Governor's Office of Emergency Services.
- Gray, Barbara. (1985). Conditions facilitating interorganizational collaboration. *Human Relations*, 38(10).
- Gray, Barbara. (1989). Collaborating: Finding common ground for multiparty problems. In E. Bardach (1998). *Getting agencies to work together. The practice and theory of managerial craftsmanship*. Washington, DC: Brookings Institute Press.
- Heifetz, R. A. & Martin L. (2002). *Leadership on the line—Staying alive through the dangers of leading*. Boston, MA: Harvard Business School Press.

- Hocevar, S. P. & Thomas, G. F. & Jansen, E. (2006). Building Collaborative Capacity: An Innovative Strategy for Homeland Security Preparedness. In Elsevier Series *Innovation Through Collaboration* (p. 6). Monterey, CA: Elsevier.
- Huxham, C. & Vangen, S. (2005). *Managing to collaborate. The theory and practice of collaborative advantage*. New York: Routledge.
- Institute of Medicine. (2002). *Tools for evaluating the metropolitan medical response system program: Phase I report*. Washington, DC: National Academy Press.
- Jansen, E. & Hocevar, S. P. & Rendon, R. & Thomas, G. F. (2008). Interorganizational collaborative capacity: Development of a database to refine instrumentation and explore patterns. In *Acquisition Research Sponsored Report Series* (NPS-AM-08-148). Monterey, CA: Naval Postgraduate School.
- Lester, W. (2008). Cooperation versus collaboration: The need to transform disaster response. *Public Administration Review*, 67(1), 84-93.
- Milward, H. B. & Provan, K. G. (2006). A manager's guide to choosing and using collaborative networks. In IBM Center for the Business of Government (Ed.), *Networks and Partnerships Series* (p. 6). Washington, DC: IBM Center.
- MMRS National Program Office. (2005). *History of the Metropolitan Medical Response System*. Reston, VA: Department of Homeland Security.
- Moore, M. H. (1996). *Creating public value: Strategic management in government*. Cambridge, MA: Harvard University Press.
- Moynihan, Donald P. (2005). Leveraging Collaborative Networks in Infrequent Emergency Situations. In IBM Center for the Business of Government (Ed.), *Collaboration Series*. Madison, WI: IBM Center, University of Wisconsin, Madison.
- Murphy, M. K., Black, N. A., Lamping, D. L., McKee, C. M., Sanderson, C. F. B., Askham, J., & Marteau, T. (1998). Consensus development methods, and their use in clinical guideline development. In de Bruin, T. & Rosemann, M. (2007). *Using the Delphi technique to identify BPM capability areas*. Presented at 18th Australasian Conference on Information Systems, Brisbane, Australia. December 5-7, 2007.
- National Commission on Terrorist Attacks upon the United States. (2004). *The 9/11 Commission Report. Final Report of the National Commission on Terrorist Attacks upon the United States*. New York: W.W. Norton & Co.

- Office of Domestic Preparedness. (2002). *Fremont after-action report. Chemical weapons full scale exercise* (FOUO). Titan Corp Contract No. OJP-2001-180-BF/01. Washington, DC: author.
- O'Leary, R. & Bingham, L., (Eds.). (2009). *The collaborative public manager. New ideas for the twenty-first century*. Washington, DC: Georgetown University Press.
- Putnam, T. (1995). *The collapse of decision making and organizational structure on Storm King Mountain*. Retrieved January 18, 2010, from http://leadership.wharton.upenn.edu/l_change/trips/SKM-fire.shtml
- Santa Clara Valley Health & Hospital System. (2002). In Sya Group (Ed.), *Countywide medical response system*. Burlingame, CA: Public Health Department, County of Santa Clara.
- U.S. Department of Homeland Security. (2008). *Supplemental resource: MMRS target capabilities/capability focus areas and community preparedness* [Brochure]. Retrieved December 14, 2008, from <http://www.fema.gov/government/grant/hsgp/index.shtm>
- U.S. Department of Homeland Security. (2010). *Quadrennial homeland security review report*. Retrieved February 9, 2010, from http://www.dhs.gov/xabout/gc_1208534155450.shtm#0
- U.S. Government Accountability Office. (December 2002). *Homeland security: Management challenges facing federal leadership* GAO-03- 260. In Hocevar, S. P. & Thomas, G. F. & Jansen, E. (2006). *Building Collaborative Capacity: An Innovative Strategy for Homeland Security Preparedness. Innovation through collaboration* (p. 6). Monterey, CA: Elsevier.
- U.S. Government Accounting Office. (2005). *Results-oriented government: Practices that can help enhance and sustain collaboration among federal agencies* (GAO-06-15). Washington, D.C.: author.
- U.S. Government Accounting Office. (2009). *Urban area security initiative. FEMA lacks measures to assess how regional collaboration efforts build preparedness capabilities* (GAO-09-651). Washington, D.C.: author.
- Weber, E. P. & Khademian, A. M. (2008). Wicked problems, knowledge challenges, and collaborative capacity builders in network settings. *Public Administration Review*, 68(2), 334-349. Retrieved May 27, 2009, from ABI/INFORM Global database. (Document ID: 1435702231).

Wood, D. J. & Gray, B. (1991). *Toward a comprehensive theory of collaboration*.
Retrieved May 27, 2009, from
<http://jab.sagepub.com/cgi/content/abstract/27/2/139>

THIS PAGE INTENTIONALLY LEFT BLANK

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
Ft. Belvoir, Virginia
2. Dudley Knox Library
Naval Postgraduate School
Monterey, California
3. San Francisco MMRS
San Francisco, California
4. Oakland MMRS
Oakland, California
5. San Jose MMRS
San Jose, California
6. San Francisco Bay Area UASI
San Francisco, California
7. MMRS National Program Office
Washington, DC